527-01

PROCEEDINGS

OF THE

American Pomological Society

Session of 1903

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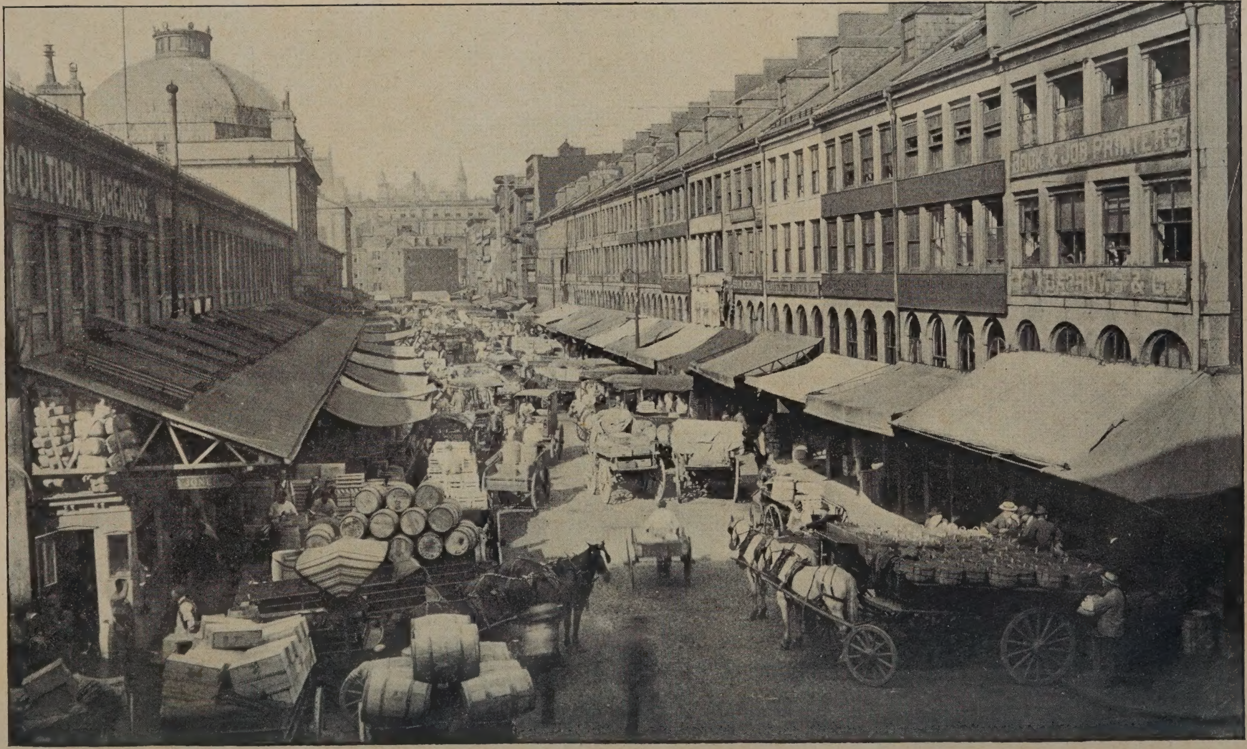

QUINCY ST. MARKET, BOSTON.

527-01

PROCEEDINGS OF THE TWENTY-EIGHTH SESSION OF THE AMERICAN POMOLOGICAL SOCIETY

HELD IN BOSTON, MASS.
SEPT. 10–12
1903

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AMERICAN POMOLOGICAL SOCIETY.

Organized 1848.

Incorporated 1887.

ACT OF INCORPORATION.

COMMONWEALTH OF MASSACHUSETTS, 1887.

Section 1. Patrick Barry, of Rochester, New York, Charles W. Garfield, of Grand Rapids, Michigan, Benjamin G. Smith, of Cambridge, Massachusetts, J. J. Thomas, of Union Springs, New York, Prosper J. Berckmans, of Augusta, Georgia, Robert Manning, of Salem, Massachusetts, their associates, the Officers and Members of the Association known as the American Pomological Society, and their successors, are hereby made a corporation under the name of "American Pomological Society," for the purpose of promoting and encouraging the culture of fruit, with all the powers and privileges and subject to all the duties and liabilities set forth in the general laws which are now or may hereafter be in force applicable to such corporations.

Sec. 2. Said corporation may, for the purposes aforesaid, have and hold by purchase, grant, gift or otherwise, real and personal property to an amount not exceeding one hundred thousand dollars.

Sec. 3. Said corporation may hold its annual meeting, or any special meeting in any place, state or country it may determine, provided that due notice shall be given to the members thereof of the time and place of said meeting.

Sec. 4. Any two of the corporators above named are hereby authorized to call the first meeting of said corporation in the month of September next ensuing, by due notice thereof to each member of said Association.

COPY OF BEQUEST FROM THE WILL OF THE LATE MARSHALL P. WILDER.

Eleventh. "I give to the American Pomological Society *one thousand dollars* the income of which shall be, from time to time, offered in *Wilder Medals* for objects of special merit.

"Also, the further sum of *four thousand dollars*, for the general purposes of the Society."

CONSTITUTION AND BY-LAWS.

CONSTITUTION.

Article 1. The name of this Association shall be the AMERICAN POMOLOGICAL SOCIETY.

2. Its object shall be the advancement of the science of Pomology.

3. It shall consist of delegates appointed by Horticultural, Agricultural and kindred Societies in the United States, and British America, and of such other persons as take an interest in the welfare of the Association, and are desirous of promoting its aims. They shall pay two dollars for each session, and twenty dollars paid at one time shall constitute a life membership.

4. The meetings shall be held biennially, at such time and place as may be designated by the Society; and special meetings may be convened at any time on the call of the President.

5. The officers shall consist of a President, a First Vice-President, one Vice-President from each State, Territory and Province, a Treasurer and a Secretary, who shall be elected by ballot or otherwise at each biennial meeting.

BY-LAWS.

1. The President shall have a general superintendence of the affairs of the Society during its vacation; give due public notice of the time and place of meeting; preside at its deliberations; deliver an address on some subject relating to Pomology, at each biennial meeting; and appoint all committees unless otherwise directed.

2. In the case of the death, sickness or inability of the President, his official duties shall devolve on the First Vice-President, or such one of the Vice-Presidents as the Society may elect by ballot or otherwise.

3. The Treasurer shall receive all moneys belonging to the Society, and pay over the same on the written orders of the President.

4. There shall be a Finance Committee of three members appointed by the President at each biennial meeting.

5. The Secretary shall, with the assistance of a reporter appointed by him, keep a record of the transactions of the Society for publication.

6. There shall be an Executive Committee consisting of five members, together with the President and Vice-President, *ex-officio*, five of whom shall constitute a quorum, who shall manage the affairs of the Society during its vacation.

7. A Chairman of Fruit Committees, for each State, Territory and Province and a General Chairman over all, shall be appointed biennially. It shall be the duty of such Chairman to appoint four additional members of his committee, and with their aid and such information as he can procure, to forward to the General Chairman one month before each biennial meeting, State Pomological Reports, to be condensed by him for publication.

8. A Standing Committee on New Fruits of American Origin, consisting of eleven members, shall be appointed by the President, immediately after his elec-

tion. It shall be the duty of this Committee to report biennially on new fruits of American origin, and also to examine, and before the close of the session report on, all new seedling varieties that may be exhibited and to make an *ad interim* report on those that were exhibited in an unripe condition at the meeting of the Society, but had subsequently attained a state of maturity ; and on such other seedlings as may have been submitted to their inspection during the Society's vacation.

9. A Standing Committee on Foreign Fruits, consisting of eleven members, shall be appointed, whose duties shall be similar to those of the committee in by-law eight.

10. A Standing Committee on Tropical and Sub-Tropical Fruits, consisting of eleven members, shall be appointed, whose duties shall be similar to those of the committee in by-law eight.

11. A Standing Committee on Nomenclature, consisting of seven members, shall be appointed biennially.

12. Vacancies occurring in committees shall be filled by the chairman of each, and in case of his death or inability to serve, his place shall be supplied by the President of the Society.

13. The order of business for each meeting shall be arranged by the Executive Committee.

14. The Constitution or By-Laws may be altered or amended, at any regular biennial meeting, by a vote of two-thirds of the members present.

OFFICERS AND STANDING COMMITTEES

OF THE

AMERICAN POMOLOGICAL SOCIETY

FOR

1903–1904.

PRESIDENT:
J. H. HALE, South Glastonbury, Conn.

FIRST VICE-PRESIDENT:
CHARLES W. GARFIELD, Grand Rapids, Mich.

STATE VICE-PRESIDENTS:

Alabama	W. F. Heikes	Huntsville.
Arizona	H. W. Adams	Glendale.
Arkansas	Ernest Walker	Fayetteville.
British Columbia	R. M. Palmer	Victoria.
California	Luther Burbank	Santa Rosa.
Colorado	W. S. Coburn	Paonia.
Connecticut	N. S. Platt	New Haven.
Delaware	S. H. Derby	Woodside.
District of Columbia	G. B. Brackett	Washington.
Florida	Geo. L. Taber	Glen St. Mary.
Georgia	P. J. A. Berckmans, Jr	Augusta.
Hawaii	J. E. Higgins	Honolulu.
Idaho	A. McPherson	Boise.
Illinois	H. M. Dunlap	Savoy.
Indiana	James Troop	Lafayette.
Iowa	Charles G. Patten	Charles City.
Kansas	Wm. H. Barnes	Topeka.
Kentucky	C. W. Mathews	Lexington.
Louisiana	F. H. Burnette	Baton Rouge.
Maine	W. M. Munson	Orono.
Manitoba	S. A. Bedford	Brandon.
Maryland	James S. Harris	Coleman.
Massachusetts	J. W. Manning	Reading.
Michigan	C. J. Monroe	South Haven.
Minnesota	S. B. Green	St. Paul.
Mississippi	A. M. Augustine	West Point.
Missouri	J. C. Evans	Harlem.
Montana	S. M. Emery	Manhattan.
Nebraska	Geo. A. Marshall	Arlington.

Nevada	Ross Lewers	Franktown.
New Hampshire	C. C. Shaw	Milford.
New Jersey	I. J. Blackwell	Titusville.
New Mexico	Parker Earle	Roswell.
New York	F. M. Hexamer, 52 Lafayette Pl.	New York.
North Carolina	J. Van Lindley	Pomona.
North Dakota	C. B. Waldron	Fargo.
Northwest Territories	Angus Mackay	Indian Head.
Nova Scotia	R. W. Starr	Wolfville.
Ohio	J. J. Harrison	Painesville.
Oklahoma	O. M. Morris	Stillwater.
Ontario	A. H. Pettit	Grimsby.
Oregon	E. L. Smith	Hood River.
Pennsylvania	H. A. Chase, 1430 S. Penn. Sq.	Philadelphia.
Prince Edward Island	Rev'd Father Burke	Alberton.
Porto Rico	F. D. Gardner	Mayaguez.
Quebec	Norman E. Jack	Chateauguay Basin.
Rhode Island	J. L. Carpenter	Cumberland.
South Carolina	Charles U. Shepard	Summerville.
South Dakota	H. C. Warner	Forestburg.
Tennessee	John Wieland	Knoxville.
Texas	T. V. Munson	Denison.
Utah	Thomas Judd	St. George.
Vermont	Wm. Stewart	Burlington.
Virginia	Samuel B. Woods	Charlottesville.
Washington	N. G. Blalock	Walla Walla.
West Virginia	F. C. Brooks	French Creek.
Wisconsin	Wm. Marshall	Madison.
Wyoming	Luther Foster	Laramie.

SECRETARY:

JOHN CRAIG, Ithaca, N. Y.

TREASURER:

L. R. TAFT, Agricultural College, Mich.

STANDING COMMITTEES.

EXECUTIVE COMMITTEE:

C. L. Watrous	Des Moines, Ia.
Wm. C. Barry	Rochester, N. Y.
Wm. Trelease	St. Louis, Mo.
G. L. Taber	Glen St. Mary, Fla.
W. T. Macoun	Ottawa, Can.

FINANCE COMMITTEE:

J. J. Harrison	Painesville, O.
F. Wellhouse	Fairmount, Kans.
L. A. Goodman	Kansas City, Mo.

GENERAL FRUIT COMMITTEE:

Chairman, S. A. BEACH, Geneva, N. Y.

Alabama	C. F. Austin	Auburn.
Arizona	A. J. McClatchie	Phoenix.
Arkansas	Wm. G. Vincenheller	Fayetteville.
British Columbia	R. M. Palmer	Victoria.
California	E. J. Wickson	Berkeley.
Colorada	Wendell Paddock	Fort Collins.
Connecticut	N. S. Platt, 345 Whalley Ave.,	New Haven.
Delaware	J. W. Killen	Felton.
District of Columbia	Wm. N. Irwin, Dept. of Agrl.,	Washington.
Florida	H. Harold Hume	Lake City.
Georgia	George H. Miller	Rome.
Hawaii	Byron O. Clark	Wahiawa.
Idaho	Robert Milliken	Nampa.
Illinois	Geo. J. Foster	Normal.
Indiana	C. M. Hobbs	Bridgeport.
Iowa	Wesley Green	Des Moines.
Kansas	F. Wellhouse	Fairmount.
Kentucky	C. W. Mathews	Lexington.
Louisiana	F. H. Burnette	Baton Rouge.
Maine	D. H. Knowlton	Farmington.
Manitoba	S. A. Bedford	Brandon.
Maryland	A. L. Quaintance	College Park.
Massachusetts	S. T. Maynard	Amherst.
Michigan	Roland Morrill	Benton Harbor.
Minnesota	A. K. Bush	Dover.
Mississippi	A. B. McKay	Agricultural College.
Missouri	J. C. Whiten	Columbia.
Montana	S. M. Emery	Manhattan.
Nebraska	R. A. Emerson	Lincoln.
Nevada	R. H. McDowell	Reno.
New Brunswick	S. L. Peters	Queenstown.
New Hampshire	F. Wm. Rane	Durham.

New Jersey	D. Aug. VanDerVeer	Freehold.
New Mexico	L. Bradford Prince	Santa Fe.
New York	W. T. Mann	Barker.
North Carolina	Thos. L. Brown	Asheville.
North Dakota	C. B. Waldron	Fargo.
Northwest Territories	George Lang	Indian Head.
Nova Scotia	F. C. Sears	Wolfville.
Ohio	W. J. Green	Wooster.
Oklahoma	H. H. Cummins	Cleo.
Ontario	L. Woolverton	Grimsby.
Oregon	E. R. Lake	Corvallis.
Pennsylvania	Geo. C. Butz	State College.
Porto Rico	F. D. Gardner	Mayaguez.
Quebec	Robert Hamilton	Grenville.
Rhode Island	F W. Card	Kingston.
South Carolina	H. B. Buist	Rock Hill.
South Dakota	N. E. Hansen	Brookings.
Tennessee	Chas. A. Keffer	Knoxville.
Texas	R. H. Price	College Station.
Utah	J. A. Wright	Ogden.
Vermont	D. C. Hicks	N. Clarendon.
Virginia	Geo. E. Murrell	Fontella.
Washington	N. O. Booth	Pullman.
West Virginia	T. C. Johnson	Morgantown.
Wisconsin	E. P. Sandsten	Madison.
Wyoming	Owen Nelson	Laramie.

COMMITTEE ON NEW FRUITS OF AMERICAN ORIGIN.

Chairman, S. B. GREEN, St. Paul, Minn.

Districts 1 and 2, L. R. Taft	Agr'l. College, Mich.
Districts 3 and 4, Wm. B. Alwood	Blacksburg, Va.
Districts 5 and 7, R. C. Berckmans	Augusta, Ga.
Districts 6, H. Harold Hume	Lake City, Fla.
District 8, A. T. Erwin	Ames, Ia.
District 9, Frederic Cranfield	Madison, Wis.
Districts 10, 13, 14, Wendell Paddock	Ft. Collins, Col.
Districts 11, 12, Jno. J. Vernon	Mesilla Park, N. M.
Districts 15, 16, H. E. Dosch	Portland, Ore.
Districts 17, 18, E. J. Wickson	Berkeley, Cal.
District 19, A J. McClatchie	Phoenix, Ariz.

COMMITTEE ON FOREIGN FRUITS:

Chairman, G. L. TABER, Glen St. Mary, Fla.

P. J. Berckmans	Upper Montclair, N. J.
L. H. Bailey	Ithaca, N. Y.
D. G. Fairchild, U. S. Dept. of Agriculture	Washington, D. C.
B. von Herff	93 Nassau St., New York, N. Y.
F. H. Burnette	Baton Rouge, La.
E. R. Lake	Corvallis, Ore.
W. T. Macoun	Ottawa, Canada.
N. E. Hansen	Brookings, S. D.

W. T. Swingle, U. S. Dept. of Agriculture	Washington, D. C.

COMMITTEE ON TROPICAL AND SUB-TROPICAL FRUITS:

Chairman, A. A. Boggs, Cocoanut Grove, Fla.

Byron O. Clark	Wahiawa, Hawaii.
Geo. C. Roeding	Fresno, Cal.
H. J. Webber	U. S. Dept. of Agriculture, Washington, D. C.
C. P. Taft	Orange, Cal.
Jno. J. Haden	Cocoanut Grove, Fla.
G. Onderdonk	Nursery, Texas.
Chas. H. Shinn	Berkeley, Cal.
A. J. McClatchie	Phœnix, Ariz.
H. Harold Hume	Lake City, Fla.
Frank D. Gardner	Mayaguez, Porto Rico.

COMMITTEE ON NOMENCLATURE:

Chairman, G. B. Brackett, U. S. Dept. of Agri., Washington, D. C.

H. E. Van Deman	Washington, D. C.
Benjamin Buckman	Farmingdale, Ill.
L. R. Taft	Agr'l College, Mich.
Luther Burbank	Santa Rosa, Cal.
A. G. Gulley	Storrs, Conn.
R. H. Price	College Station, Texas.

COMMITTEE ON REVISION OF CATALOGUE:

Chairman, W. H. Ragan, U. S. Dept. of Agri., Washington, D. C.

E. J. Wickson	Berkeley, Cal.
Wendell Paddock	Fort Collins, Col.
E. L. Smith	Hood River, Ore.
S. H. Fulton	Experiment, Ga.
H. E. Van Deman	Washington, D. C.
N. S. Platt	New Haven, Conn.

SPECIAL COMMITTEE ON SCORE-CARD:

Chairman, F. A. Waugh, Amherst, Mass.

W. A. Taylor	Washington, D. C.
J. T. Stinson	St. Louis, Mo.
John Craig	Ithaca, N. Y.
E. S. Hubbard	Federal Point, Fla.

SPECIAL COMMITTEE ON INSPECTING AND GRADING FRUIT:

Chairman, C. H. Williamson, Quincy, Ill.

F. D. Cummings,	Portland, Me.
W. A. McKennon	Ottawa, Can.
G. Harold Powell	Washington, D. C.
A. A. Boggs	Cocoanut Grove, Fla.
L. A. Goodman	Kansas City, Mo.

LIST OF MEMBERS OF THE AMERICAN POMOLOGICAL SOCIETY.

LIFE MEMBERS.

Allan, Alex. McD		Goderich, Ontario.
Allen, Abner		College Park, Cal.
Allen, Edwin		New Brunswick, N. J.
Alwood, Wm. B		Blacksburg, Va.
Appleton, Francis H	251 Marlboro St.,	Boston, Mass.
Ash, John		Pomfret Centre, Conn.
Atkins, Chas. G		Bucksport, Me.
Babcock, E. F		Waitsburg, Wash.
Babcock, J. Lyman		Norfolk, Va.
Baird, David		Baird, N. J.
Balmer, John A		Cle Elum, Wash.
(For Agricultural College, Pullman, Wash.)		
Barnes, Wm. H., State Capitol		Topeka, Kans.
(For Kansas State Horticultural Society.)		
Barry, Wm. C.		Rochester, N. Y.
Beach, S. A		Geneva, N. Y.
(For N. Y. Agricultural Experiment Station.)		
Beadle, D. W	307 Givens St.,	Toronto, Ontario.
Beal, W. J		Agr'l College, Mich.
(For Michigan Agricultural College.)		
Berryhill, J. G		Des Moines, Iowa.
Berckmans, Prosper J		Upper Montclair, N. J.
Black, Chas		Hightstown, N. J.
Blanchard, N. W		Santa Paula, Cal.
Bridgeman, Alfred		Newburgh, N. Y.
Briggs, G. R		Plymouth, Mass.
Brill, Francis		Hempstead, L. I., N. Y.
Bucklin, Simon S		Bristol, R. I.
Buffum, B. C		Laramie, Wyo.
(For University of Wyoming, Laramie, Wyoming.)		
Bush, Raphael		Bushberg, Mo.
Butler, Chas		Hartsdale, N. Y.
Butz, Geo. C		State College, Pa.
(For Pennsylvania State College.)		
Calkins, John S		Pomona, Cal.
Chase, Arthur H		Concord, N. H.
(For State Library.)		
Chase, Howard A	1430 S. Penn. Square,	Philadelphia, Pa.
Chase, Lewis		Rochester, N. Y.
Clapp, Wm. Channing		Dorchester, Mass.
Clark, Edmund S	144 Essex St.,	Boston, Mass.
Coburn, W. S		Paonia, Col.
Colman, N. J		St. Louis, Mo.
Cone, Moses H		Blowing Rock, N. C.

Cook, David C.	Chicago, Ill.
Cook, M. S	Avondale, Pa.
Craig, John	Ithaca, N. Y.
Crandal, C. S	Glendale, Cal.
Davis, J. C. Bancroft	1621 H. St., N. W., Washington, D. C.
Devol, W. S	Redlands, Cal.
Dreer. W. F	Chestnut St., Phila., Pa.
Durfee, Geo. B	Fall River, Mass.
Durell, E. H	Woodbury, N. J.
Earle, Parker	Roswell, New Mexico.
Egbert, Knott C	Santee, Neb.
Ellwanger, George	Rochester, N. Y.
Eshleman, John K	Downington, Pa.
Falconer, Wm	Pittsburg, Pa.
(Superintendent of Parks.)	
Faxon, M. B	31 State St., Boston, Mass.
Field, E. T	Middletown, N. J.
Furnas, R. W	Brownville, Neb.
Gammon, C. W	Walnut Grove, Cal.
Garfield, Chas. W	Burton Farm, Grand Rapids, Mich.
Gay, Leslie F	Monrovia, Cal.
Gerrish, O. K	Lakeville, Mass.
Gold, T. S	West Cornwall, Ct.
Goodell, H. H	Amherst, Mass.
Goodman, L. A.	4000 Warwick Blvd., Kansas City, Mo.
(For Missouri State Hort. Society.)	
Graves, S. S	Geneva, N. Y.
Green, S. B	St. Anthony Park, Minn.
(For University of Minnesota.)	
Green, W. J.	Wooster, Ohio.
(For Agricultural Experiment Station.)	
Grosvenor, C. E	48 Boylston St., Boston, Mass.
Guy, T. W	Sulphur Springs, Mo.
Hadwen, O. B	Worcester, Mass.
Hancock, Caroline G	Sacramento, Cal.
(For Free Library.)	
Hansen, N. E	Brookings, S. Dak.
Harris, Geo. W	Ithaca, N. Y.
(For Cornell University.)	
Harris, James A	Panasoffkee, Fla.
Harroun, W. S	Santa Fe, N. M.
Hart, W. S	Hawks Park, Fla.
Hartevelt, A.	Rynsburgerweg 14, Leiden, Holland.
Heikes, W. F.	Huntsville, Ala.
Helmer, J. W	39 Aldine Square, Chicago, Ill.
Herff, B. von.	93 Nassau St., New York, N. Y.
Hexamer, F. M.	52 Lafayette Place, New York, N. Y.
Hoag, C. L	Lockport, N. Y.
Holmes, E. S	Grand Rapids, Mich.
Hubbard, T. S	Geneva, N. Y.
Hunnewell, Henry S	Wellesley, Mass.
Hunnewell, Walter	87 Milk St., Boston, Mass.

Hutt, H. L.......Guelph, Ont.
(For Ontario Agricultural College.)
Jeter, Tinsley.......Bethlehem, Pa.
Kendall, Edward.......Cambridge, Mass.
Kendall, Geo. F.......Cambridge, Mass.
Kidder, N. T.......Milton, Mass.
Kinney, L. F.......Kingston, R. I.
Kirkpatrick, T. J.......Springfield, O.
Lake, E. R.......Corvallis, Ore.
Leighton, G. B. F.......Alfred, Me.
Lindley, J. Van.......Pomona, N. C.
Lovett, J. T.......Little Silver, N. J.
Lyman, Henry L.......Charlottesville, Va.
Lyons, Jas. M.......66 Hartford St., Roxbury, Mass.
Lysle, Addison.......Fillmore, Cal.
McKay, A. B.......Agr'l College, Miss.
(For Mississippi Agricultural College.)
Macoun, W. T.......Ottawa, Canada.
(For Central Experiment Farm.)
Mann, William R.......Sharon, Mass.
Masters, James H.......Nebraska City, Neb.
Maud, Chas. E.......Riverside, Cal.
McCulloch, J. M.......Cincinnati, Ohio.
McDowell, R. H.......Reno, Nev.
McLaughlin, Henry.......Bangor, Me.
Miller, F. R.......Sugar Grove, Pa.
Miller, H. W.......Paw Paw, W. Va.
Minott, C. W.......343a Highland Ave., Somerville, Mass.
Missouri Fruit Experiment Station.......Mountain Grove, Mo.
Monroe, C. J.......South Haven, Mich.
Mudd, Henry T.......Room 408 Security Bldg., St. Louis, Mo.
Munson, D. O.......Falls Church, Va.
Murray, R. D.......Key West, Fla.
Noble, Samuel W.......Jenkintown, Pa.
Orton, Samuel W.......Binghamton, N. Y.
Parsons, S. B.......Flushing, N. Y.
Pearson, John M.......Godfrey, Ill.
Periam, Jonathan.....1044 Pratt Ave., Rogers Park, Chicago, Ill.
Perot, Wm. H.......Baltimore, Md.
Phelps, Lyman.......Sanford, Fla.
Phoenix, F. K.......Delevan, Wis.
Popenoe, E. A.......Manhattan, Kan.
(For Kansas Agricultural College.)
Pullen, Alexander.......Milford, Del.
Purington, E. F.......W. Farmington, Me.
Quaintance, A. L.......College Park, Md.
Quinn, P. T.......Newark, N. J.
Ream, J. A.......Phoenix, Ariz.
Richardson, Chas. E.......Horticultural Hall, Boston, Mass.
Riehl, E. A.......Alton, Ill.
Rock, John.......Niles, Cal.
Roeding, Geo. C.......Fresno, Cal.

Rumph, Samuel H. .... Marshallville, Ga.
Russell, Gurdon W. .... Hartford, Conn.
Rust, David .... Horticultural Hall, Philadelphia, Pa.
Sadler, O. W .... Pittsburg, Pa.
Sampson, F. G .... Boardman, Fla.
Scarborough, W .... Cincinnati, Ohio.
Selover, Edward C .... Auburn, N. Y.
Shaw, C. C .... Milford, N. H.
Shepard, C. U .... Summerville, S. C.
Smith, Erwin F., ... 1457 Staughton St., Washington, D. C.
Smith Geo. W .... Hartford, Conn.
Smith, W .... Geneva, N. Y.
Smith, William Elliott .... Alton, Ill.
Smith, Wing R .... Syracuse, N. Y.
Stark, Clarence M .... Louisiani, Mo.
Stark, Wm. Henry .... Louisiani, Mo.
Starr, Robert W .... Wolfville, N. S.
Stewart, Henry L .... Middle Haddam, Ct.
Streator, Geo. J .... Garrettsville, Ohio.
Strong, Wm. C .... Waban, Mass.
Swineford, Howard .... Richmond, Va.
Swingle, W. T .... U. S. Dept. of Agriculture, Washington, D. C.
Taber, G. L .... Glen St. Mary, Fla.
Taft, Edward P .... Providence, R. I.
Taylor, F. W .... St. Louis, Mo.
Taylor, Thomas .... 238 Mass. Ave., N. E., Washington, D. C.
Taylor, Wm. A .... 55 Q St., N. E., Washington, D. C.
Temple, F. L .... Van Ness House, Burlington, Vt.
Temple, John T .... Davenport, Ia.
Thomas, Geo. B .... West Chester, Pa.
Townsend, B. C .... Bay Ridge, L. I., N. Y.
Trelease, Wm .... Botanical Garden, St. Louis, Mo.
Trowbridge, Geo. W .... Glendale, Ohio.
Uber, Carlton A .... Glencarlyn, Va.
Underwood, J. M .... Lake City, Minn.
Utley, H. W .... Detroit, Mich.
(For Public Library.)
Van Deman, H. E .... Washington, D. C.
Van Gelder, Jacob .... Saugerties, N. Y.
Walker, Ernest .... Fayetteville, Ark.
(For Arkansas Agricultural Experiment Sta.)
Ward, C. W .... Queens, L. I., N. Y.
Warder, R. H .... Lincoln Park, Chicago, Ill.
Ware, Benj. P .... Clifton, Mass.
Warren J. R .... Cairn-Warren, Harcourt, Victoria, Australia.
Waterer, Hosea .... Philadelphia, Pa.
Watson, B. M .... Jamaica Plains, Mass.
Watrous, C. L .... Des Moines, Ia.
Watrous, Philip .... Des Moines, Ia.
(For Horticultural Library, Capitol Building)
Wellborn, Jesse M .... Conyers, Ga.
Wellhouse, F .... Fairmont, Kans.

Whitehead, John B		Norfolk, Va.
Whitten, J. C (For University of Missouri.)		Columbia, Mo.
Wickersham, Robt. A		Winchester, Va.
Wilder, Edward B		Dorchester, Mass.
Williams, Henry T		Colorado Springs, Col.
Wood, Wm. H. S		New York City, N. Y.
Yeomans, Wm. H		Columbia, Conn.

BIENNIAL MEMBERS FOR 28TH SESSION, 1903–1904.

Alabama Nursery Co		Huntsville, Ala.
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Allen, W. F		Salsbury, Md.
Allis, E. W		Adrian, Mich.
Anderson, J. R	Department of Agriculture,	Victoria, B. C.
Atkinson, Wilmer		Philadelphia, Pa.
Atwood, G. A		Springfield, Mo.
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Bailey, Robert E		Fulton, Mo.
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Baird, John H		Ft. Valley, Ga.
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Baker, W. D		Quincy, N. H.
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Berckmans, P. J. A		Augusta, Ga.
Berckmans, R. C		Augusta, Ga.
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Black, John, M.D		New Castle, Del.
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Block, A		Santa Clara, Cal.
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Bowman, A. M		Salem, Va.
Brackett, G. B	Dept. of Agriculture,	Washington, D. C.
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Brooks, Fred C		French Creek, W. Va.
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Brown, Thomas L		Asheville, N. C.
Bruner, T. K		Raleigh, N. C.

Buckman, Benj.		Farmingdale, Ill.
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Cheever, A. W		Dedham, Mass.
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Clohan, Alex		Martinsburg, Mo.
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Coates, Leonard		Napa, Cal.
Coe, E. F		New Haven, Conn.
Collins, Arthur J		Moorestown, N. J.
Collins, John S		Moorestown, N. J.
Corbett, L. C.	Department of Agriculture,	Washington, D. C.
Corrigan, Jos. F		St. Leo, Fla.
Coryell, R. J		Colorado Springs, Col.
Couch, E. J		Ridgefield, Conn.
Cranefield, Frederic		Madison, Wis.
Craig, Wm., Jr		Abbotsford, P. Quebec, Can.
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Cummings, F. D		Portland, Me.
Cummins, H. H		Bernards, Oklahoma.
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Davis, K. C.		Morgantown, W. Va.
Dean, M. L		Agr'l College, Mich.
De Cou, Howard F		Moorestown, N. J.
Derby, S. H		Woodside, Del.
Dickens, Albert		Manhattan, Kans.
Dickie, James		Massies Mills, Va.
Dinwiddie, Howard B		Greenwood Depot, Va.
Dosch, Henry E		Portland, Oregon.
Earle, F. S.	Botanic Garden,	New York, N. Y.
Eaton, Horace	31 Milk St.,	Boston, Mass.
Elliott, J. Y		Rushville, Mo.
Elliott, Wyman	815 E. 18th St.,	Minneapolis, Minn.
Elliott, W. H.		Brighton, Mass.
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Emerson, S. J		Lunenburg, Mass.

Engle, E. B		Waynesboro, Pa.
Erwin, Arthur T		Ames, Ia.
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Fairchild, H. L		Bridgeport, Conn.
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Faville, E. E		DesMoines, Ia.
Ferguson, A. M	University of Texas,	Austin, Texas.
Filcher, J. A	State Board of Trade,	San Francisco, Cal.
Fletcher, S. W		Ithaca, N. Y.
Flick, W. B		Lawrence, Ind.
Foster, Addison P	1 Beacon St.,	Boston, Mass.
Foster, Geo. J		Normal Ill.
Foster, T. C		Harrisburg, Pa.
Fraser, S		Ithaca, N. Y.
Fulton, S. H		Experiment, Ga.
Gage, Jno. P		Vineland, N. J.
Gano, W. G		Parkville, Mo.
Gardener, F. D		San Juan, Porto Rico.
Gilbert, Z. A		Greene, Me.
Gill, Geo. W	287 East Broad St.,	Columbus, O.
Gleason, M. B		Westfield, N. Y.
Goodell, H. H		Amherst, Mass.
Gould, H. P	Department of Agriculture,	Washington, D. C.
Graves, H. C		Alachus, Fla.
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Green, E. C		Champaign, Ill.
Greene, Wesley		Des Moines, Ia.
Greening Bros		Monroe, Mich.
Greening, Chas. E		Monroe, Mich.
Griesa, A. H		Lawrence, Kans.
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Gulley, A. G		Storrs, Conn.
Haden, Mrs. Florence P		Cocoanut Grove, Fla.
Hale, J. H		So. Glastonbury, Conn.
Hale, Moseley		So. Glastonbury, Conn.
Hale, Stancliffe		So. Glastonbury, Conn.
Hale, Henry E		Princeton, N. J.
Hall, John		Rochester, N. Y.
Hallock, Nicholas		Queens, N. Y.
Halsted, Byron D		New Brunswick, N. J.
Hamilton, Robert		Grenville, P. Q.
Hamon, G. S		Easton, Mo.
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Harrison, J. G. and Sons		Berlin, Md.
Harrison, J. J		Painesville, O.
Harrison, Wm. H		Lebannon Springs, N. Y.
Harvey, John T		Pittsfield, N. H.
Haseltine, S. A		Springfield, Mo.
Hayward, E. H		De Land, Fla.
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Heikes, W. F		Huntsville, Ala.
Henry, D. H		Geneva, N. Y.

Henry, J. P.	Rumsey, Cal.
Hershiser, O. L.	Buffalo, N. Y.
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(For Worcester Horticultural Society.)	
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Hume, H. Harold	Lake City, Fla.
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Ilgenfritz, Chas. A.	Monroe, Mich.
Irish, H. C.	Missouri Botanical Garden, St. Louis, Mo.
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Jewell Nursery Co.	Lake City, Minn.
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Johnson, T. C.	Morgantown, W. Va.
Johnson, W. B. K.	Allentown, Pa.
Johnson, W. G.	52 Lafayette Place, New York, N. Y.
Jones, Hiram T.	Elizabeth, N. J.
Joosten, C. H.	85 Dey St., New York, N. Y.
Jordan, A. T.	New Brunswick, N. J.
Josselyn, Geo. S.	Fredonia, N. Y.
Judson, L. B.	Moscow, Idaho.
Katzenstein, Geo. B.	Sacramento, Cal.
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Kellogg, R. M.	Three Rivers, Mich.
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Kimball, F. A.	National City, Cal.
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Kinney, T. L.	South Hero, Vt.
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Koiner, G. W.	Richmond, Va.
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Lang, George	Indian Head, N. W. Territories.
Lazenby, Wm. R.	Columbus, Ohio.
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Lippincott, J. F.	Morrestown, N. J.

Loope, T. E		Eureka, Wis.
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McPherson, A		Boise, Idaho.
McPike, H. G		Alton, Ill.
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Manning, Jacob W		Reading, Mass.
Marshall, Geo. A		Arlington, Neb.
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Merriam, J. H		Southington, Conn.
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Miller, G. H		Rome, Ga.
Miller, H. W		Paw Paw, W. Va.
Miller, Wilhelm	"Country Life in America,"	New York, N. Y.
Milliken, Robert		Nampa, Idaho.
Molumphy, J. T		Berlin, Conn.
Moore, Jacob		Attica, N. Y.
Moore, R. A		Kensington, Conn.
Moore, S. W		Elwell, W. Va.
Morgan, W. H		Westmont, N. J.
Morrill, Roland		Benton Harbor, Mich.
Morris, O. M		Stillwater, Oklahoma.
Munson, T. V		Denison, Tex.
Munson, W. M		Orono, Me.
Murray, N. F		Oregon, Mo.
Murrell, Geo. E		Fontella, Va.
New York State Library		Albany, N. Y.
Onderdonk, G		Nursery, Tex.
Oregon Nursery Co		Salem, Ore.
Orr, W. M		Fruitland, Ont.
Paddock, Wendell (For Colorado Agricultural College.)		Fort Collins, Colo.
Painter, E. O		Jacksonville, Fla.
Palmer, R. M	Department of Agriculture,	Victoria, B. C.
Patten, C. G		Charles City, Ia.
Peek, J. Yates	398 Nostrand Ave.,	Brooklyn, N. Y.
Pfaender, Wm., Jr		New Ulm, Minn.
Phillips, J. L		Blacksburg, Va.
Phoenix, F. S		Bloomington, Ill.
Pierce, L. B		Tallmadge, O.
Platt, Norman S	395 Whalley Ave.,	New Haven, Conn.
Pound, Asa		Sparta, Ont.
Powell, Edwin C		Springfield, Mass.
Powell, E. P		Clinton, N. Y.
Powell, G. Harold	Department of Agriculture,	Washington, D. C.

Powell, Geo. T.		Briarcliff Manor, N. Y.
Price, Homer C.		Ames, Ia.
Price, H. L.		Blacksburg, Va.
Price, R. H.		College Station, Tex.
Prince, L. Bradford		Santa Fe, N. M.
Putnam, J. H.		Litchfield, Conn.
Ragan, W. H.	Department of Agriculture,	Washington, D. C.
Kainey, G. S		Salem, Ill.
Rane, F. Wm		Durham, N. H.
Raymond, Jno. E.		Philo, Ill.
Reasoner, E. N.		Oneco, Fla.
Reid, W. H.		Tennent, N. J.
Repp, Jno.		Glassboro, N. J.
Ricketts, James H.	638 G. St., S. E.,	Washington, D. C.
Riggs, Jno. W.		Waterloo, Kans.
Ring, C. A.		Appleton, N. Y.
Roesch, Lewis		Fredonia, N. Y.
Rogers, Isaac C.		Dansville, N. Y.
Rolfs, P. H.		Miami, Fla.
Rott, A. I.		Medina, Ohio.
Ross, Chas. H	220 Washington Bldg.,	Tacoma, Wash.
Rouse, Irving		Rochester, N. Y.
Rowe, Geo. Edwin		Grand Rapids, Mich.
Ruddick, J. H.		Bourbon, Mo.
Sabsovich, H. L.		Woodbine, N. J.
Sage, C. D.		N. Brookfield, Mass.
Sanborn, Miss Gulielma P.		Augusta, Me.
Sandsten, E. P		Madison, Wis.
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Sears, F. C.		Wolfville, N. S.
Secor, Eugene		Forest City, Ia.
Sedgwick, T. F.		Honolulu, Hawaii.
Selby, A. D.		Wooster, Ohio.
Smith, A. M		St. Catherines, Ont.
Smith, E. L.		Hood River, Ore.
Smith, Leroy A.		Higganum, Conn.
Smith, Theodore J.		Geneva, N. Y.
Snyder, Walter	226 Light St.,	Baltimore, Md.
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Stevens, Abel F.		Wellesley, Mass.
Stewart, John		Martinsburg, W. Va.
Stewart, Guy L.	B. and O. R.R.,	Baltimore, Md.
Storrs and Harrison Co.		Painesville, O.
Stuart, Wm. M.		Burlington, Vt.
Sturgus, M. B.	Treasury Department,	Washington, D. C.
Taber, Walter F		Poughkeepsie, N. Y.
Taft, C. P		Orange, Cal.
Taft, L. R.		Agr. College, Mich.
Taylor, Edwin		Edwardsville, Kans.
Thomson, F. H		Isle of Hope, Ga.
Thurlow, T. C		West Newberry, Mass.
Troop, James		Lafayette, Ind.

Troyer, A. M	Calhoun, Ala.
True, John W.	New Gloucester, Me.
Tucker, E. W	Williamsfield, Ill.
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Waite, M. B.	Department of Agriculture, Washington, D. C.
Walker, Ernest	Fayetteville, Ark.
Ward, J. B	Lyons Farms, N. J.
Warner, H. C.	Forestburg, S. D.
Wason, Geo. A	Nashua, N. H.
Waugh, F. A.	Amherst, Mass.
Webb, Wesley	Dover, Del.
Webber, H. J.	Department of Agriculture, Washington, D. C.
Webster, F. M	Champaign, Ill.
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Welch, E. S	Shenandoah, Ia.
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White, W. H	251 Nasmith St., Lowell, Mass.
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Whitney, C. A	Upton, Mass.
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Wilson, William	London, Ont.
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Wood, Allen L	Rochester, N. Y.
Woods, Samuel B	Charlottesville, Va.
Woolverton, L	Grimsby, Ont.
Yeomans, L. T	Walworth, N. Y.
Young, B. M	Morgan City, La.
Zimmerman, C. D	131 Norwood Ave., Buffalo, N. Y.

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In Memoriam.

This page is dedicated by the Society to the memory of members who have entered into the fruits of their labors since the session of 1901 at Buffalo.

Reported by committee on necrology. W. H. RAGAN,
CHARLES E. RICHARDSON.

MEMBERS DECEASED SINCE PUBLICATION OF PROCEEDINGS FOR 1901.

LIFE.

Frank W. Andrews	Washington, D. C.
Chas. R. Baker	Brooklyn, N. Y.
David B. Flint	Boston, Mass.
Prof. E. S. Goff	Madison, Wisconsin.
Hon. George Hoadley	New York, N. Y.
George B. Sawyer	Wiscasset, Me.

BIENNIAL.

Capt. John J. Haden	Cocoanut Grove, Fla.
Jesse B. Rogers	Newark, N. J.
L. T. Sanders	Plain Dealing, La.

FORMER BIENNIAL MEMBERS

Ex. Secy. Geo. C. Brackett	Fresno, Cal.
Nicholas Ohmer	Dayton, Ohio.
Frederick Law Olmstead	Brookline, Mass.
A. S. Packard	Covert, Mich.
Rev'd J. F. Taylor	Douglas, Mich.

LIFE MEMBERS WHOSE ADDRESSES ARE UNKNOWN.

Mrs. Helen V. Austin,	Formerly	Winchester, Ky.
T. S. Force,	"	New York, N. Y.
John M. Hunter,	"	Houston, Texas.
R. B. Koen,	"	Memphis, Tenn.
Brice Stewart,	"	Clarksville, Tenn.
John Wieland,	"	Knoxville, Tenn.

SKETCHES OF LIFE WORK OF DECEASED MEMBERS.

GEORGE C. BRACKETT.

George C. Brackett, whose death occurred at Fresno, California, April 18, 1903, was born in the State of Maine, in October, 1830. His father, the late Reuben Brackett, was an early settler, in what is now the State of Iowa, having removed with his family, to that frontier section in 1841. George was therefore truly a product of the Great West, and as such made his mark in the world, having left the full impress of his genius upon her institutions to a degree seldom falling to the lot of man. This was peculiarly true in reference to matters pertaining to western horticulture and pomology.

In his early life he located at Lawrence, Kansas, where he made the pursuit of horticulture his chosen calling until failing health admonished him to try the genial climate of California, in what has proved to be, the vain hope of restoring his exhausted physical resources. He resided in Fresno, until his death caused by cancer of the stomach brought relief. As a resident of Kansas, he became an early and able advocate of an organization of those of her citizens who made horticulture a business or a pleasant pastime. As such he was a charter member, and first secretary of the Kansas State Horticultural Society. Here his natural genius found congenial and useful development, and with it, the rapid development of horticulture in that great state. Citizens of Kansas may pride themselves in the work that this society has accomplished in the past, and still has in store for their glory and profit. And no one individual citizen has done, more than has George C. Brackett, to bring about such conditions.

In 1891 the American Pomological Society, at its biennial session in the city of Washington, although Mr. Brackett was not present at that meeting, well knowing his worth and fitness for the place, through his long and able services to the Kansas Society, called him to the Secretaryship of that organization. In this capacity he served for three consecutive terms of two years each and until failing health prompted him to decline further service in behalf of the society.

Mr. Brackett was a brother of Col. G. B. Brackett, the present efficient Chief of the Pomological section of the Bureau of Plant Industry, of the United States Department of Agriculture.

Mr. Brackett's connection with this society began in 1879 when his name appears as both Vice-president and member of the General Fruit Committee for the State of Kansas. In his report as committeeman for that year, he discusses at some length two new synonyms of old and well-known apples. *Copperschmidt*, he had been informed by a colony of Swiss which had settled in his neighborhood, was a well-known variety in western Switzerland and eastern France, which they identified as our Ralls (Rawles Genet). *Turn Off Lane*, he adds is the name under which Quince (Cole) is known and cultivated in portions of Kansas.

In his report for 1881, he refers to the promising character of the Sand plum (*P. Watsoni*), a native western species that yields readily to cultivation and from which new and valuable varieties may be expected in the near future.

In 1883 he mentions Terwilliger (Terwilliger's Favorite) and Mason Orange, as two promising Kansas seedling apples. Early victor grape, a Kansas seedling is also very promising. Among popular market varieties of apples, none are more highly esteemed than Ben Davis, Winesap, Missouri, Ralls and Gilpin.

In his report for 1885, he gives the statistics of bearing orchard trees in Kansas as 10,750,000 for the year 1884. In his report he discusses at length the probable value to their section of the Russian Apricot, at that time being industriously introduced by interested parties, who he fears, in their zeal, "over work the hobby," to the detriment of planters.

In 1887 he reported that Kansas had just harvested its tenth consecutive full crop of apples. These continued "good harvests," had greatly stimulated and encouraged tree planting. Of varieties, Early Harvest, Red June, Early Cooper, Chenango, Maiden Blush, Lowell, Jonathan, Smith, Ralls and Missouri, were still in the lead. York Imperial is rapidly growing in popularity. Cullen is a new Kansas seedling apple of great promise.

In 1889 and again in 1891, although he still remained a member of the Committee, he seems to have made no reports for his State.

At the meeting in 1891 he was elected Secretary of this Society, to which he was re-elected in 1895, there being no meeting in 1893. During this period, extending over six years of time, he performed the arduous duties of Secretary with great ability and fidelity. Before the close of his term as secretary, declining health disabled him for further duties as an official of the society, since which his career is made known in the sketch that precedes this record.

W. H. RAGAN.

THOMAS HENRY HOSKINS, M. D.

Born Gardiner, Me., May 14, 1828, died Newport, Vt., June 26, 1902. A physician by training, an editor by nature and a horticulturist by inclination was this many sided man. He received his professional education in the south previous to the civil war. A physical disability finally chose for him the calling in which he had always a deep interest. He settled near Lake Memphremagog in Vermont in 1868 and began growing fruit and experimenting with hardy varieties. In this way he was instrumental in introducing a valuable early summer and a late winter variety. These are Yellow transparent and Scott's winter both highly prized in the northern apple regions. His orchard at Newport, Vt., gave him material for many valuable contributions to the agricultural papers of the country.

He did much to test and sift the worthy varieties from the great collection of Russian apples introduced by the U. S. Department of agriculture in 1870 and the later importations of Messrs. Gibb and Budd. By teaching and by example Dr. Hoskins raised the standard of fruit growing not only in Vermont but in Northern New England and builded for himself an enduring monument. J. C.

PROFESSOR E. S. GOFF.

Emmet Stull Goff, of Madison, professor of horticulture in the University of Wisconsin, died on June 6, 1902. He was born on a farm near Elmira, N. Y., in 1852. He was horticulturist at the Agricultural Experiment Station at Geneva, N. Y., prior to 1882, when he was appointed professor of horticulture, and soon after horticulturist of the Experiment Station at the University of Wisconsin. From that time to the date of his final sickness, he was diligent and active in the promotion of all matters of interest to the horticulturist of the North and West. As a teacher he was excelled by few and his publications, which were numerous and varied, were always acceptable and valuable. He contributed largely by precept and example towards the discovery and acquisition of varieties of fruits of a hardy nature, that would be adapted to his adopted, rather rigid climate. As an investigator his work was accorded high rank. Among one of the first to study apple scab he conducted the first successful experiments for its control. He was a pioneer in spraying and invented the kerosene attachment to spray pumps. His work in morphological botany is also worthy of note. He it was who ascertained the approximate period of the development of flower and leaf buds in the leading orchard fruits.

He was a retiring conscientious worker and will long be remembered by the horticultural world for his many sterling qualities.

W. H. R. and J. C.

PREFATORY NOTE.

BY THE SECRETARY.

The Boston meeting of 1903, held in Horticultural Hall on invitation of the Massachusetts Horticultural Society, will rank as one of the most successful in the History of the Society. The local arrangements were in the hands of capable men, and to Mr. W. C. Strong, Mr. Rich, Mr. Hadwen and others belongs the credit and the well merited praise.

The fruit exhibit was especially instructive. The range of territory covered and the diversity of product shown were unusually extensive. To Former Secretary Taylor should be accorded generous recognition of his unremitting efforts in behalf of a worthy fruit exhibit. To the same officer, seconded by the executive committee, are due sincere thanks for the high quality of the program The present volume will be prized by fruit grower and student alike as a repository of invaluable experience and historical record.

May the standard set by this meeting be not only maintained but improved in succeeding years.

J. C.

COLLEGE OF MAINE

PROCEEDINGS

OF THE

AMERICAN POMOLOGICAL SOCIETY

AT ITS TWENTY-EIGHTH BIENNIAL SESSION,

HELD IN

Boston, Mass., Sept. 10-12, 1903.

THURSDAY MORNING SESSION.

Boston, Mass., Thursday, Sept. 10, 1903.

The Twenty-Eight Biennial Session of the American Pomological Society was called to order by President Watrous in Horticultural Hall, Boston, shortly after 10 A. M.

President Watrous: Gentlemen, let us be in order. The blessing of God upon the work of the session will be invoked by Rev. Dr. James L. Barton, of Boston.

INVOCATION.

REV. JAMES L. BARTON, Boston, Mass.

Let us invoke the Divine blessing. Almighty God, maker of heaven and earth, whose heavens declareth thy glory and whose firmament showeth thy handiwork, we first of all at the beginning of this session come to recognize thy law. We recognize that thy law is over all law and that without it we are powerless. We come to Thee, recognizing thy power and thy counsel and thy love, invoking thy presence with this Association, as it begins its work and its service, blessing it in all of its sessions and all of its work; that the blessing of God may abide upon it and give it success! We call upon our Heavenly Father because we recognize the power of God and the weakness of humanity. Thou workest through thy will in the world! Thou dwellest in the human heart! We recognize our Heavenly Father in the beauty of the world about us; we recognize that thou openest the flowers and makest them lovely so that they cheer our lives with their beauty. We recognize that thou wettest the soil and makest it productive. Man may plant and man may cultivate, but thou, O Lord, givest us the increase. Help us to see thee in thy harvest and in preparation for the world to come may we look beyond the blossom. May this association bind together the countries upon this great continent with a deeper and stronger bond of fraternity; and may we feel that this great continent has one common purpose, and that to glorify thee. Give thy blessing to all the officers of this association and all who take part in this convention, and may it rebound to thy glory, through Jesus Christ our Lord. Amen.

The President: We are now very glad to have words of welcome for this society in the city of Boston and state of Massachusetts, from Mr. O. B. Hadwen, long associated with the American Pomological Society and with the Horticultural Society of Massachusetts.

ADDRESS OF WELCOME.

O. B. HADWEN, WORCESTER.

Gentlemen of the American Pomological Society: In behalf of the Massachusetts Horticultural Society it becomes my privilege as well as duty to welcome you to this, our Horticultural Building, where you have been invited to hold your meetings during your sojourn in this city.

Your presence in such goodly numbers affords us the highest gratification and encouragement, showing us that the fifty-five years of the Society's life and existence still finds it vigorous and progressive. We all have a pride in her age, growth and prosperity for she has long labored in the cause of pomological science which has been a vast benefit to every state and territory in the union. But great as our progress has been there is greater still in store for those who devote themselves to the orchards and vineyards and gardens of this great country whose latitute and longitude ranges from the Atlantic to the Pacific and from the Lakes to the Gulf, where fruits and vegetables are in the greatest variety and profusion furnishing food and luxuries as no other country can

The Society has certainly accomplished a great work for the entire continent since its organization and will continue to do so long as the importance of pomology and fruit culture nurtures a civilizing, elevating and sustaining influence to the vast number engaged in it, for you truly cultivate a science and an art and use both your head and hand to assist nature in her wondrous work and evolution. By your well considered nomenclature as adapted to each section, serious mistakes are obviated; with improved facilities of transportation and exportation, with benefits of cold storage so extensively used and the vast industry created since your Society was organized, the country has received increased prosperity.

This age of rapid scientific and useful discoveries tends to furnish and promote interests which this Society has especially in keeping; with its biennial sessions it brings together men engaged in pomological industries of the highest order and renews and encourages all engaged in pomological pursuits.

The American farmer who owns the land he tills, works both for himself and his posterity with the double assurance that with his intelligent head and his industrious hand he adds to the happiness of life and his usefulness as a citizen.

At the last session of this Society held in Boston, in September, 1887, you voted to accept the generous bequest of the late Marshall P. Wilder (who for so many years acted as your President), to constitute his bequest as a permanent fund whereby pomological interests can be permanently encouraged, and whereby an Act of Incorporation under the laws of Massachusetts was enacted by the Legislature to perpetuate the existence of this Society.

Gentlemen, your work has become classic; by your careful nomenclature, by your courageous discarding of worthless varieties, by your discussions and published reports, all of this wonderful progress of the Society has been manifest.

Gentlemen, I again welcome you to the hospitalities of the Massachusetts Horticultural Society.

RESPONSE TO ADDRESS OF WELCOME.

By Chas. W. Garfield, Grand Rapids, Mich.

Mr. President and Boston Friends of the American Pomological Society: I confess to a feeling of great hesitancy in replying to this delightful address of welcome, because it seems to me that this response should be the special prerogative of the president of the Society. But the president is my commandant, and when he calls upon me I am bound to respond as best I can and in this case I shall make it a matter of pleasure, because I am always happy in an opportunity to act for this grand old American Pomological Society.

We are here today in response to a most cordial invitation and it affords the membership the keenest pleasure to return to the cradle of the Society. Fifty-five years ago, as has just been remarked, the Society was born and rocked in its cradle in the environment of this city. To be sure some of the men who touched the cradle have passed into the beyond but the inspiration and the thought which were in their minds at the beginning in connection with the organization of the Society have followed us on through all the experiences of the years; and now as the Society comes back again to view its cradle,—not as a child, not as a youth, but as a full grown man,—it will take the keenest delight in meeting a large number of those gentlemen who are the successors to the progenitors of our Americal Pomological Society; and as you welcome us it is my pleasure to thank you kindly for this cordial word and warm greeting in this beautiful horticultural abode.

The American Society went out from here, as I have said, a mere child and passed here and there over the highways of our country, developing the Boston child into a full grown American. It has been brightened and deepened in its purposes and influence and it comes back to you bringing something of the fruition which has been evolved within itself in these years of administration and ministration. The Society has met some dangers in its career and occasionally it has felt like cuddling back again into the Boston cradle because of its fears. You know these commercial fruit growers are great men for reaching out and absorbing everything in sight. They are seeking not only our material but vitality, and they are using every possible means for the development of commercial pomology. Some of the good men in our Society felt that their strong arms were embracing the Society with the danger of throttling some of the vital purposes in its life, and perhaps magnified the danger which they saw menacing the high purposes for which the organization stands. But in the organization of a co-ordinate society by the American Nurserymen the danger disappeared and the problem of assisting the purely commercial side of pomology without endangering the scientific purposes outlined in the Society's organic law was solved. The two branches have been helpful to each other and are working in the greatest harmony, but now there appears in our midst a new menace.

The scientists see in their investigations an importance that does not seem to be appreciated in the present management of the Society. They feel the inspiration of the new life which has been fed by the admirable work done in our experiment stations, and they are reaching toward the heart of the organization, forgetting, I fear, that this has been from the beginning a scientific Society; was organized as such, and its leading purpose has been the development in America of a pomology which would rank in scientific attainments with other branches of the great movement of natural science in the development of the resources of our new world. Speaking for the Society allow me to say to these gentlemen that we will give them every opportunity to accomplish their bright and beautiful and benevolent designs and we understand why you are anxious to utilize the machinery of our organization in carrying on your progressive work. Allow us to take your hand and bid you welcome to the forum of our organization, but do not lead us into language or methods that cannot be understood by the common people in whose interests we desire always to work.

And now we are here in Boston feeling the thrill of this grand reunion, happy in the thought that we are welcomed home. We recognize in the onward progress of this Society, for our movement is ever onward and upward, nothing as the final object in view short of perfection itself. As we move on toward the goal we shall always recognize as a station on the route far toward the object of our achievement, "Boston," and it will give us the keenest pleasure to note this fact as we pass that way.

The chair was then taken by Vice-President Strong while President Watrous presented his address.

PRESIDENT'S ADDRESS.

C. L. WATROUS, DES MOINES, IA.

I am grateful to the fortune which has permitted us to gather again in fraternal council. What pleasure in the world could be purer than to meet in this season of ripening things when the choicest bounties of nature are putting on their robes of perfection, golden and red and purple. Was it not most fitting that the first and happiest of men should be made a pomologist and ordered to cherish his fruits as the price of his happiness?

It is true that our summer has not been quite perfect. Some of us have had too much sunshine and some too much rain yet is the land full of those things that strengthen the bodies and make glad the hearts of men.

In this goodly city, thick memories cluster about us. Visions of the past rise before us. Forms of noble and unselfish men pass in procession led by one, our former honored president, who, of all men who ever lived in the western world, undoubtedly holds the highest place in the temple of Pomological fame. This not only for what he did but for what his wise beneficence has enabled and still enables other workers to accomplish. His fame stands alone in Pomological history.

Yet must we not linger among those memories but must do our work of the present as did those most admirable and honored men do theirs. Our program will offer opportunities to recall the past and from the wise and unselfish labors of our predecessors to draw fresher inspirations and higher resolves for ourselves. From that program I shall not detain you long. Our By-laws ordain that "The president shall read an address on some subject related to Pomology at every biennial meeting." I can think of nothing more needing our consideration than the creation of new fruits by sexual reproduction in the various regions of our country.

It seems to me that all our experience shows the hopelessness of expecting satisfactory results from the use, in one region, of fruits originated in another region having different conditions. It is precisely as if we used in manufacturing, tools made for other purposes or antiquated and not best for our use. We are all manufacturers. Our products for the market are fresh fruits and preparations from them and our tools are the varieties available in any given locality. How may we reasonably excuse ourselves for this lack of enterprise in breeding new fruits? I think the newness of the knowledge of its possibility is the potent cause. It is not a long time since the wise Bacon thus quaintly lamented the lack of this knowledge. "The compounding or mixture of plants is not found out, which, if it were is more at command than that of living creatures, wherefore it were one of the most notable discoveries touching plants to find it out, for so you may have great varieties of fruit and flowers yet unknown." We may safely rest assured that such knowledge was not a part of science in that day and yet unknown to so deep a scholar. In fact it is a knowledge of but yesterday and known to but few. Ask the first hundred educated men you meet and not five shall be able to explain the process—not so many as two. I think there is no other important subject concerning which there is such a surplus of densest ignorance. Law-makers have not learned it at all. They all know something about tools and machinery. At least they know that such things exist for their users have votes and make trouble for statesmen if their wants get not attention.

And so it is, in this day of enlightenment, that if any one invent any new modification, however slight, of a tool or machine which makes labor more productive, we jealously protect the rights of the inventor and a fortune often awaits a small improvement; while if a man create a new fruit and so add comfort to the lives of generations, he has no certainty of gaining anything except the satisfaction of having been a public benefactor; and that does not pay taxes. Ought the pomologists of this country to attempt a remedy for so great a wrong? I think they ought and believe it will be done in the not distant future. It would tend toward better health and a greater comfort in living.

The varieties of fruits available in any region are the tools of our trade. With them we transform the chemicals and the water of the earth and the air into form and substance to please the eye and the taste and to refresh and nourish the bodies of men.

If you go into any factory you find tools not known a few years ago and better fitted to make labor productive. But our grandchildren are growing and eating the same apples and pears that we gray haired men used to climb trees after, sixty years ago, on these hillsides. Experts are breeding corn for a greater oil content, beets for a higher per cent of sugar, cotton for a stronger disease resisting power, wheat for more bushels to the acre and for special uses and so down the list, but in comparison with these activities how little is being done by the pomologists of our own or of any other country. Every state west of the Atlantic timbered region has spent large sums to learn in bitterness that the fruits selected for use in the coast region of their origin because adapted to those conditions, were, for the same reason, not well adapted to the new conditions, differing profoundly. The prairie regions spent vast sums in their efforts to successfully grow foreign fruits. They were assured that the summer crops in the places of their origin resembled those of the upper Mississippi Valley. The promotors of the movement forgot that trees and vines must withstand the changes of twelve months of the year instead of only half that number. The losses through that experiment have been estimated to run into millions, yet I am persuaded that the losses were trifling compared with the losses our whole country is suffering annually by growing varieties of fruits not adapted to the conditions of the regions into which they have been removed. Men and animals change their food and their shelter when compelled to change climates. Plants are fast rooted and an accumulation of differences so slight as to be unseen by our eyes defeat their struggle for usefulness. When a buffalo or deer is reduced by starvation or wounds, the wolves take him. When our trees and plants are weakened by uncongenial environment, insects or diseases destroy them. What orchardist has not found that on his grounds certain varieties fall easy victims to these enemies while other varieties under the same conditions remain healthy. Each year the work shop of the orchardist becomes more and more a laboratory wherein are compounded the many deadly poisons which we shower upon the tender foliage and fruits of our invalid trees.

A few months since I listened to some most interesting advice to beginners in orcharding, in a region of orchards and the heart of the whole discussion was, "Keep your trees vigorous. Keep them healthy and strong. If you do this you have won more than half your battle!" It occurred to me that I had not heard anything fuller of wisdom. Only the other day a letter came from a good friend who has done much systematic work in creating new orchard fruits. After mentioning his losses from this unfavorable season he rejoicingly added, "But I am surprised and gratified that my new crosses are in better condition and have more fruit and better foliage than the old varieties about them." I think the surprise would have been more natural if the new crosses selected for promise in the place of their birth had failed to excel those originated and selected under different conditions.

A generation ago Darwin called attention to the invigorating effects of cross fertilization upon the resulting offspring. Experiment has confirmed him until it is become a part of the science of plant life. Among all higher animals the race is continued by sexual crossing at each stage and not otherwise. It is only some lower forms that have non-sexual reproduction and that within narrow limits only. Every pomologist knows how common it is that a seedling fruit may have great value in the region of its origin but quite fail under other conditions. It may even fail at home, when propagated non-sexually. These things point out the value of sexual reproduction in the region where the variety is to be used.

At one of the first meetings of this Society which it was my privilege to attend, a gray haired member said to me, "We usually find that the best exhibits of any variety come from the region of its origin." A most pregnant observation! We know well that our soil and our climate change. Nature has maintained plant life by sexual reproduction through all the changes of geologic periods. It is beyond doubt that there are practically no limits to the ability of plants to undergo changes by seedling reproduction, when such changes are advantageous to them in their struggle for life.

I think we are all agreed on the desirability of new creations but we shrink from the difficulties. A great poet once lamented, "Art is long but life is short."

The time needed for creating and testing a new orchard fruit is indeed long when measured by the life of one man, but suppose we try another plan and join the labors of the pomologist in his orchard to that of the bright eyed eager young men at the various state experiment stations. Let the pomologists make their crosses as their judgments dictate and send the seeds to the station. There let them be germinated in the greenhouse and in due course find themselves growing in the open air of spring.

Each contributor might retain his interest in his own products to whatever extent he pleased. He might grow old and weary without seeing the full fruitage of his hopes. Yet would not the grand object be defeated for a great many new fruits from sexual crossing would be born into life and take their chances in the trial of usefulness. This is done in some states and may as easily be done in many. Why shall we not resolve that it shall be? Why not? Who can count the benefits, in money and in health, which would follow if some one would make crosses, for instance, between Ben Davis on the one side and Jonathan or Grimes or Spitzenburg on the other, so as to retain the vigor and fruitfulness of the one and an approach to the delicious quality of the others. Ought this feat to be declared impossible without trying? Not at all.

Of course many seedlings would be worthless. But that should not discourage. Nature, herself, seems to find some good reason for creating a great many useless individuals both of plants and of men ; but out of it all has come most wonderful progress and the advance moves steadily on, not hasting and not resting. A graft in the midst of a bearing tree will probably have its flowers fertilized by the surrounding blossoms and if some would fail of crossing no great harm should follow. Unworthy progeny there would be in abundance and most of them would be weeded out while very young. But advancement there would be also, for in that way lie vigor and strength ; and out of many, some will be better adapted to their region than their parents are, for the parents are most liklely struggling in exile far from the congenial surroundings of their birthplace.

I most earnestly hope that these words may lead to some systematic effort along the lines indicated. Would it be time mis-spent if a small committee should be selected, charged to investigate whether protection for a term of years by federal law for all creators of new and valuable fruits, be not practicable? One thing is certain. If we had a trade union of all the fruit growers in the country, we could send a committee to Washington and secure whatever reasonable protection we asked for and at the first session of Congress, too.

I have already detained you longer than I intended and need but one minute more. I think this American Pomological Society should express itself earnestly as favoring a carefully guarded federal enactment regulating interstate commerce in nursery stock, to the end of hindering the free and unlimited transmission of diseased and infested trees and plants dangerous to our orchards.

We, rigidly, and as a matter of course, restrain the movements of diseased men and animals, but our orchards are exposed because a knowledge of the laws of life of plants is not a part of the common knowledge of educated men and is a sealed book to law makers.

And now, having used this much of your valuable time, I promise to devote myself henceforth wholly to your service, doing my best to help you get the most enjoyment from the rich and varied program before us. (Applause.)

The President : Now we shall have the Treasurer's report and we shall get comfort from it because we have not grown poor, but a little richer.

REPORT OF THE TREASURER.

Agricultural College, Mich., Sept. 5, 1903.

L. R. Taft, Treasurer, in account with the American Pomological Society,

DR.

To cash on hand Sept. 5, 1901	$639 99
To interest on Bonds, $5,000, for two years at 4 per cent	400 00
To 12 life membership fees (two had paid biennial fees)	236 00
To 314 biennial membership fees	628 00
To 16 volumes of Proceedings sold to members	16 00
Total	$1919 99

L. R. TAFT,
Treasurer.

		Cr.	Dr.
	Amount forward		$1919 99
1901.			
Oct. 26.	By cash paid Arthur C. Anderson, Buffalo, (Reporting Buffalo Meeting)	$ 65 00	
Oct. 26.	By cash paid S. A. Beach, Geneva, printing and postage (For Chairman General Fruit Committee)	4 73	
1902.			
Jan. 8.	By cash paid Peter L. Krider Co., Philadelphia (For 27 Wilder Medals, cases and lettering)	149 54	
Mar. 10.	By cash paid W. A. Taylor, office expenses (Postage and telegrams $31 98 ; stationery and printing $25 50)	57 48	
July 14.	By cash paid L. R. Taft, office expenses (Rent safe deposit box $3 00 ; express, postage and exchange $53 85 ; labor $1 20)	58 06	
July 14.	By cash paid Robert Smith Printing Co., Proceedings	382 24	
1903			
Apr. 1.	By cash paid W. A. Taylor, Secretary, salary one year	100 00	
	By cash paid W. A. Taylor, office expenses (Engraving $13 90 ; printing and stationery $3 50 ; postage and express $26 80)	54 20	
May 8.	By cash paid W. A. Taylor, office expenses (Printing $47 25 ; postage $15 00)	62 25	
Aug. 22.	By cash paid W. A. Taylor, salary one year to Sept. 1	100 00	
Sept. 5.	By cash paid W. A. Taylor, office expenses (Printing, telegrams and express $33 60 ; printing and stationery $38 50)	72 10	
Sept. 5.	By cash paid L. R. Taft, office expenses (Rent safe deposit box $3 00 ; postage and express $6 13 ; printing $3 50)	12 63	
	Total payments	$1118 23	
Sept. 5.	Cash to balance	801 76	
		$1919 99	$1919 99

L. R. Taft,
Treasurer.

Statement of Wilder Medal Fund.

Income on hand Sept. 5, 1901	$ 253 31	
Interest on Bonds to be used for medals	80 00	$ 333 31
Paid for Wilder medals awarded at Buffalo		149 54
Balance on hand (included in above balance)		$183 77

Paid Arthur C. Anderson, Buffalo, reporting	$ 65 00
Paid Robert Smith Printing Co., printing Proceedings	382 24
Paid S. A. Beach, printing and postage	4 73
Paid Peter L. Krider Co., medals	149 54
Paid W. A. Taylor, salary as secretary	200 00

Paid W. A. Taylor, expenses of secretary's office	$246 03
Paid L. R. Taft, expenses of treasurer's office	70 69
Total payments	$1118 23
Total receipts	$1919 99
Less payments	$1118 23
Cash on hand to balance	$ 801 76

L. R. TAFT,
Treasurer.

REPORT OF AUDITING COMMITTEE.

Boston, Mass., Sept. 12, 1903.

To the Officers and Members of the American Pomological Society :

Gentlemen—Your auditing committee has examined the books and vouchers of the Treasurer, and find the same correct, and that there is on deposit in the City National Bank, Lansing, Mich., the sum of $801.76 to the credit of the Society.

(Signed) GUY L. STEWART,
JOHN T. SINSON,
FRANKLIN DYE,
Auditing Committee.

Mr. Strong: I think the addresses and reports are very interesting, especially that given us by our President. I would suggest that a committee be appointed to take into consideration the suggestions contained in them. As I recall, one of the suggestions was made that a small committee should be appointed by this convention to petition Congress in regard to protecting originators of new fruits. While I make this motion, I request that I shall not be put upon that committee, because I think a younger man who is interested in such a subject should head that committee; but I do move that the address be referred to a committee to report on later.

The motion was duly seconded and carried, and the President appointed Vice-President Strong to name the committee and report at the beginning of the afternoon session. [It does not appear that this committee was appointed.

SECRETARY.]

APPOINTMENT OF COMMITTEES.

The president announced the regular committees for the session as follows:

COMMITTEES.

CREDENTIALS—Wm. H. Barnes, Topeka, Kansas; T. K. Bruner, Raleigh, N. C.; N. S. Platt, New Haven, Conn.

ORDER OF BUSINESS—Wm. C. Strong, Waban, Mass.; Prof. Wm. B. Alwood, Blacksburg, Va.; Mr. A. A. Boggs, Waynesboro, N. C.

AWARD OF WILDER MEDALS—Dr. F. M. Heramer, New York, N. Y.; Col. G. B. Brackett, Washington, D. C.; Prof. John Craig, Ithaca, N. Y.; Prof. A. G. Gulley, Storrs, Conn.; Mr. L. A. Goodman, Kansas City, Mo.

RESOLUTIONS—Hon. C. W. Garfield, Grand Rapids, Mich.; Hon. Samuel B. Woods, Charlottesville, Va.; Mr. J. H. Hale, South Glastonburg, Conn.

MEMORIALS—Prof. W. H. Ragan, Washington, D. C.; Mr. P. J. Berckmans, Augusta, Ga.; Mr. C. E. Richardson, Boston, Mass.

AUDITING—Prof. John T. Stinson, St. Louis, Mo.; Hon. Franklin Dye, Trenton, N. J.; Mr. Guy L. Stewart, Parkersburg, W. Va.

The appointment of committees and the reception of an invitation from Mr. A. Warren Patch to visit Faneuil Hall market any morning during convention week concluded the first morning's session.

THURSDAY AFTERNOON SESSION.

September 10, 2 o'clock P. M.

President Watrous in the chair.

The President: Let us be in order. Various announcements of general interest were made as to routes, etc., in Boston, and statement that the City of Boston would furnish a free barge (bus) ride through the Parkway.

The President: Now we are to have an illustrated lecture by Dr. C. L. Marlatt, of Washington, D. C., who will tell us about his journey in search of the origin of the San José scale in the Orient.

THE DISCOVERY OF THE NATIVE HOME OF THE SAN JOSÉ SCALE IN EASTERN CHINA AND THE IMPORTATION OF ITS NATURAL ENEMY.

By C. L. Marlatt, Dept. of Agriculture, Washington, D C.

It is not necessary before this audience of orchardists to give any detailed account of the notorious San José scale. The damage occasioned by this insect in this country to our deciduous fruit interests, and the effect of its presence in our orchards on our foreign fruit trade, is well-known to all of you. I shall, therefore, confine myself to an account of the investigations and explorations leading to the discovery of the native home of the San José scale in Northeastern China, and of the discovery of its natural enemy in a small ladybird, and the importation of the latter to this country to work in our infested orchards.

It is a well-known fact that wherever an insect is native, it is normally kept in check by some natural means, and, as a rule, by some predaceous or parasitic enemy. In the chance importation of foreign destructive insects to our shores, it very often happens that the natural check or enemy is left behind, and the imported pest becomes much more injurious here than in its native place. In a number of notable instances in this country very great benefit has been derived by the discovery and bringing over of such natural enemies, thus reproducing the conditions which obtain in the native home of the injurious insect. The fluted scale and the Australian ladybird in California is the most notable instance. The importation of this Australian ladybird has made citrus growing possible in California, and saves annually many millions of dollars to that state. This and other similar cases indicated the desirability of discovering the native home of the San José scale and the importation, if possible, of whatever natural means were found there keeping it in check.

The origin of the San José scale was unknown prior to this exploration. Nevertheless there was a pretty well founded belief, shared by Dr. L. O Howard and myself and others, that the insect was a native of Eastern Asia. Without going into detail, this belief was based chiefly on the ground that most other quarters of the world had been fairly well investigated without any evidence of this insect being found. This scale was known to occur in Japan, but the evidence rather indicated that it had been recently brought to that country from the United States in connection with the large shipments of nursery stock from California to Japan during the last 25 or 30 years. The itinerary, therefore planned by the speaker, with the advice and consent of the Chief Entomologist of the Department of Agriculture, Dr. Howard, was to include Japan, China, and any other countries in Eastern Asia which it should prove desirable to visit. Six months were devoted to a very thorough exploration of the different islands of the Japanese Empire, and three months to China, with shorter periods in other regions. The explorations in China and Japan are the only ones which bear especially on the San José scale problem.

EXPLORATIONS IN JAPAN.

During the time spent in Japan, from April to September, 1901, the speaker visited some 42 provinces, and explored all of the principal islands, representing a stretch in latitude the equivalent of from Northern Maine to Florida.

Altogether these explorations enabled him to make a pretty correct judgment on the San José scale problem in Japan. Japan is not especially a horticultural country. Her comparatively enormous population of 46,000,000 compels the growth of cereals and other necessities of life wherever possible. Very little land, therefore is devoted to fruit raising, and fruits are considered as luxuries. Nevertheless, practically every dwelling house in Japan has a little dooryard or kitchen garden in which are single examples of cherry, plum, peach, persimmon, and other trees. Furthermore, the roadways and temple grounds and streets are lined with cherry and plum trees, planted for bloom and ornament and not for fruit. There are orchard districts in Japan of limited extent. In northern and central Japan there are a few peach orchards and a few orchards of native pears, and in southern Japan, small orchards of orange, pomelo and walnut and other fruits. In old Japan the chief deciduous fruit is a native pear grown in small patches of from a fraction of an acre, to two or three acres in extent. These are trained low on overhead trellises, and at a short distance look like vineyards. There are several districts where such orchards occur in considerable numbers. These orchards are very ancient, many of them having trees more than one hundred years old. If the San José scale were native to Japan it would occur in these pear orchards, the pear being one of the favorite food plants of this scale insect.

In northern Japan, including the island of Hokkaido and the northern end of the main island, Hondo, apple raising has been introduced, in modern times, very much on the lines of this country. Prior to the opening of Japan to foreign commerce and exploration, the apple as an edible fruit was unknown in that country. The orchards in northern Japan are chiefly, therefore, of American origin and represent American varieties. Most of the stock came from California, and much of it was undoubtedly infested with San José scale when it was received. There is, therefore, throughout these northern apple orchards, a mild infestation with this scale. The Japanese are very enthusiastic in their efforts to gain all the benefits of western civilization, and this is shown in horticultural as well as other fields. The three leading nurseries, therefore, of Japan, have been very active during the last 20 or 30 years, in importing the different improved varieties of pear, peach, and apple from America and all three of these nursery districts have become infested with San José scale, evidently from such importations from California, where the scale has been widely distributed for 30 years. Outside of these nurseries, however, in central and southern Japan, the San José scale did not occur except where it had been introduced on new stock from the nurseries referred to. The old native pear orchards were free from scale except where replants had been made of American varieties or new native stock to fill in breaks in the orchards. The infestation was very often just beginning and immediately surrounded the replants. In all Japan, therefore, in the little house gardens and temple grounds where there were cherry, plum and other trees suitable for San José scale, this insect did not occur, except where the evidence was very plain of its recent introduction as indicated. Without going into details of the evidence, it is sufficient to say that the conditions in Japan are essentially the same as this country. The San José scale is a recent comer. It was, in fact, not known in Japan prior to the year 1897, when its presence there was first determined but it has now been scattered pretty widely by nursery stock, exactly as in this country, and occurs under similar conditions : in other words only where it has been recently introduced. The investigation showed very distinctly that Japan cannot be considered responsible for the San José scale.

EXPLORATIONS IN CHINA.

Investigations up to this point, while freeing Japan from the onus of giving the San José scale to the world, left the problem unsettled, as to the original home of this insect. China remained as the most likely place of origin, and the speaker proceeded to China to continue his explorations there. While in Japan a good deal of information was gained relative to fruit conditions in China, from English, German, and American residents in China who were spending the summer months in Japan to escape the rather trying climate of China. In brief it may be stated that deciduous fruits are grown from the Shanghai region northward, the peach being practically the only fruit grown to any extent about Shanghai. The great apple district of China is the region lying back of the city of Chifu in the north. This apple growing industry was started many years ago by a missionary, Dr. Nevius, and has assumed very considerable proportions and covers a good deal of the province of Shantung. Below Shanghai the orange and other subtropical fruits replace the deciduous varieties. North of Chifu native fruits only are grown, consisting of the native pear and peach, and such wild fruits as wild crab apples and an edible haw apple.

A very considerable exploration of the country lying immediately back of Shanghai was made in the course of a long house-boat trip. A great many peach orchards were examined and a good deal of miscellaneous fruit and other plants growing about house yards were inspected. Nowhere was there any evidence of the San José scale, nor were scale insects of any sort very much to be seen. The climate of this region is unfavorable for such insects and they are normally killed out by fungous disease. The speaker afterwards proceeded by boat to Chifu,—a five day ocean trip from Shanghai, and made a considerable exploration throughout the apple orchards of this region on horseback, visiting among others, the original orchards planted by Dr. Nevius. In all of these the San José scale was found scatteringly present, not, however, doing any special damage, and probably not enough to be noticed, if its possibility for evil was not so well established. The presence of the San José scale in this region, did not, however have any special significance, since much of the original stock was obtained from California, and doubtless from nurseries which were infested with the scale. The journey of exploration was continued northward to Tiensin and Pekin. In this region the San José scale was also found on native plants, including the flowering peach, a tree grown for ornament solely, and not for fruit, and notably on the native fruits in the markets in these cities.

The markets of Pekin were of especial interest in this connection. Pekin is the center and market for all the region lying to the north and west, and the streets devoted to the sale of fruits in the Chinese city, are one of the great show places of Pekin. The fruit and nut products are brought into Pekin in little two-wheeled carts, or more generally on camel-back, great caravans of heavily loaded camels and streams of carts constantly entering the city with the products of the outlying provinces. One finds, therefore, in the markets of the Chinese city the fruit products of all northern China, and can study them at ease. The conditions under which this fruit is grown were learned from engineers, officers, and others who had explored the region in question. All of the district lying between Pekin and the great wall, north, and west, and east, has been most carefully explored and mapped by the foreign military authorities. From various individuals employed in this minute survey a great deal was learned relative to the fruit growing in the district indicated. Much of the fruit found in the markets of Pekin comes from the hill region leading up to the mountains separating China from Mongolia and Manchuria. These fruits are native apples, pears and peaches, and the little haw apple already mentioned. Great quantities of these fruits were examined in the market with the exception of the peach which, was then out of season, and later similar examinations were made at Tiensin. A very scanty but general infestation with San José scale was found on the different fruits examined. Perhaps one apple in a hundred would have a few of these scales about the blossom end and the same proportion was true of the haw apple and the native pear. Throughout the region where these fruits are grown, there has been no introduction of foreign stock. The occurrence of the San José scale on these two fruits was conclusive evidence that in the region from whence it came the San José scale is native. The scattering occurrence of the scale also indicated, as would be anticipated, that this pest in its native home is kept in check by natural means. The investigations made at Shanghai, and later southward to Hongkong, the Malay Peninsula, and Java, indicated that the San José scale in Eastern Asia cannot survive below Shanghai.

The special district where it is native and thrives, is a fairly well shut off region, which probably accounts for the failure of this insect to become a world pest ages ago. The district in question is the region leading up to the mountains and comprises the northern and northwestern frontiers of China proper. Beyond the great wall on the north and west lies Mongolia, consisting chiefly of the vast Desert of Gobi. To the northeast and separating the region from Manchuria and Corea is the Eastern Gobi desert. To the south and east lies the great alluvial plain, the product of centuries of mud carried down by the Yellow River, a region where cereals only are grown. These are all effective barriers and especially so when considered in connection with the political conditions of the past. We have, therefore, as the original home of this insect a naturally shut off area from which it could not easily escape under the conditions prevailing up to our own times.

The means by which the San Josè scale came from China to America is a matter of interest. This pest reached California on trees imported by the late James Lick, a gentleman who was an enthusiastic horticulturalist and an energetic importer of trees from foreign countries. It is the speaker's belief that he imported from China, possibly through Dr. Nevius, with whom he was probably in correspondence, the flowering chinese peach, and brought with it the San José scale to his premises. Undoubtedly this scale insect came to this country in some such way on ornamental stock from North China.

THE ASIATIC LADYBIRD, THE NATURAL ENEMY OF THE SAN JOSÉ SCALE.

Throughout the region investigated in China where the San José scale occurs the natural agency keeping the scale in check was evidently a small ladybird (*Chilocoros similis*) which was found feeding voraciously upon it wherever the scale was present in any numbers. This ladybird, while evidently the natural enemy of the San José scale, will feed on other similar scale insects also, and in China was found feeding on the white peach scale (*Diaspis pentagona*), another destructive scale pest also native to China and eastern Asia, and furthermore also recently introduced into America. This *Diaspis* scale is in fact, already an insect of world-wide distribution, and in Japan and Italy is a special enemy of the mulberry, as well as of stone fruits generally, and various other plants. It breeds much more slowly, however, than the San José scale and is much less dangerous. It is interesting in this connection merely as affording an alternative host insect or food for the Asiatic ladybird.

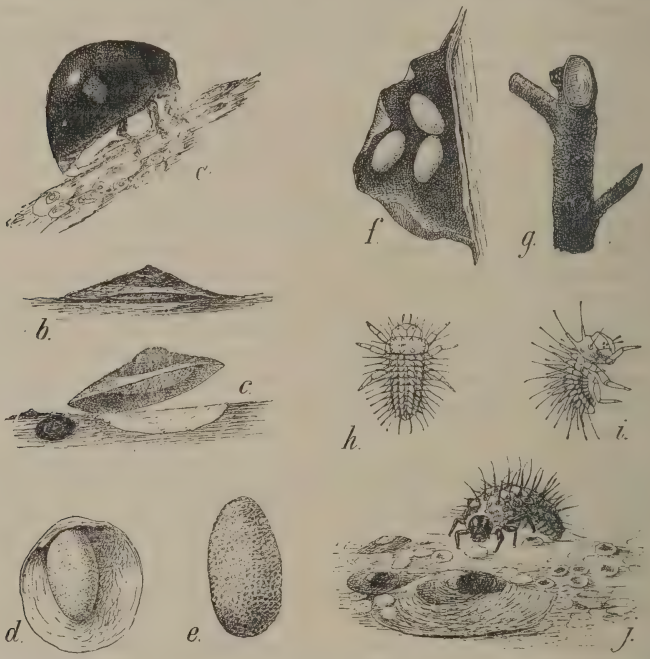


Fig. 1—Asiatic ladybird (*chilocorus similis*) oviposition and early larval stages; *a*, beetle in act of thrusting egg beneath scale; *b*, scale slightly raised showing edge of egg beneath; *c*, scale lifted from bark showing manner of attachment to the inner surface; *d*, view of egg in the scale; *e*, egg magnified to show sculpturing; *f*, their eggs under flap of bark; *g*, same, natural size; *h*, *i*, dorsal and lateral views of newly hatched larva; *j*, larva, first stage feeding on mature and young scales—all enlarged except *g*.
[Marlatt, year book Dept. of Agriculture 1902.]

After the discovery of the fact that the chief enemy of the San José scale was evidently a ladybird, a considerable quantity of these beetles were collected both in Japan and China and sent by mail to Washington. Unfortunately most of the specimens died in transit or during the first winter. Two individuals, however, survived, and during the first summer from these two some five thousand or more beetles were secured. The original stock was kept in cages, but later on was liberated in a small experimental orchard attached to the insectary of the Department. During the first summer a considerable number of colonies were sent out to various states, placing them in charge, in the main, of the entomologist connected with the state experiment stations. During the present summer, the second one since the introduction of this insect, some thirty or forty additional colonies have been distributed. A good many of these colonies were liberated under rather unfavorable conditions and the beetles probably perished. The best success has come from certain colonies sent to Georgia and placed in the charge of Prof. Scott. One of these, located at Marshallville, Georgia, in the orchard of S. H. Rumple, presents a most satisfactory outcome. This orchard contains some 17,000 peach trees, covering about 85 acres and has lying adjoining it a much larger orchard belonging to the same owner, containing 250,000 trees, all scatteringly infested with scales. The insects were liberated in August, 1902, in the smaller orchard. An examination of this orchard in July of this year indicated that the beetles were rapidly spreading and that they would soon cover the smaller orchard. A rough estimate of the number of ladybirds in all stages, made at this time by Mr. Scott, and an agent of the Department of Agriculture, places the total at somewhere between 25 and 40 thousand. In Georgia the beetles evidently continued breeding, as observed by Mr. Scott, up to January. There is, therefore, in this orchard at least, a very flattering outlook for good results from the imported beetle. Other colonies placed where there were only two or three or but few trees, have not yielded very satisfactory results. This outcome is not especially surprising, as under such circumstances the beetles are very apt to fly away and become lost. Leaving them in cages for too long a period is also unfortunate for the reason that a caged tree is unhealthy, as shown by the leafage and growth of the tree itself under such conditions, and furthermore, the scale insect may become exterminated and the beetles die of starvation. The partial shading resulting from the caging also seems to have an adverse effect on the

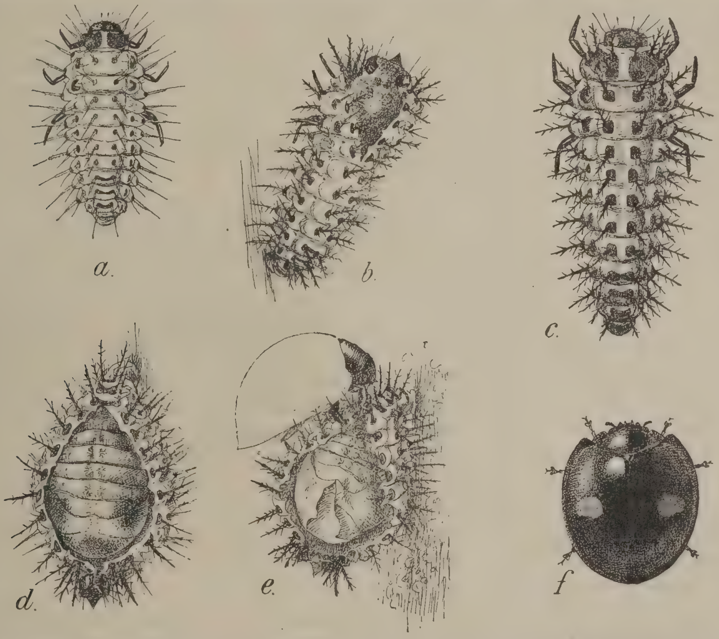


Fig. 2—Asiatic ladybird (*chilocorus similis*) later larval stages, pupa and adult insect: *a*, second larval stage; *b*, cast skin of same; *c*, full-grown larva; *d*, method of pupation, the pupa being retained in split larval skin; *e*, newly emerged adult not yet colored; *f*, fully colored and perfect adult—all enlarged to the same scale.
[Marlatt, year book Dept. of Agriculture 1902.]

vitality of the beetles. The result, therefore, of our experience so far is that we are no longer caging the beetles, but advise their being liberated at once on the infested trees, or at the most, caging them for three or four weeks only, or until the first brood of larvæ is underway. We are endeavoring also to place our colonies for the present where there are rather large bodies of trees infested with scales. After the beetle becomes once well established, distribution can be more general, but until this end is reached it is probably wiser not to waste material in sending specimens for colonization to small orchards or gardens or for liberation on a few trees. In Japan and China where it occurs rather generally, it finds food for itself in every dooryard, the white peach scale being very widely distributed in those countries and the San José scale also in northern China and portions of Japan. In this country on the other hand, the San José scale is probably its only host insect, and in spite of the wide dissemination of the San José scale, it still occurs after all in a very scattering way in orchards here and there with often 20 or 30 miles between places of infestation. Therefore this imported insect cannot multiply and extend itself as rapidly and naturally as would be the case if the San José scale occurred more generally. It will be necessary therefore to distribute the imported beetle artificially in Georgia, Alabama and other regions where there are large orchard districts, it will undoubtedly be able to take hold much better than it will in regions where orchards are more scattering and of smaller area. Ultimately we hope to get it well established in America and anticipate that it may have the same wide beneficial action which it now has in China and Japan, It probably will not be a complete remedy for the San José scale for the reasons already indicated, but if it will keep the San José scale in check as much as it does in its native country it will be of very decided service. Ultimately one of its chief advantages will be the fact that it will take hold of the scale in many small orchards and gardens, the owners of which would be indifferent and would not undertake remedial operations and thus furnish centers for additional reinfestation. The importation of this insect cannot work anything but good. It feeds only on scale insects and ultimately may feed on certain of our native species as well as the San José scale. It is a most voracious feeder and its larvæ has been observed to eat as many as five or six scale insects a minute, and even an average of but one a minute would give a total of 1440 scale insects destroyed per day. The appetite of the larvæ seems never to be satisfied and it is eating practically all the time. The adults also feed actively on the scale. The chief drawback to this importation is the fact that several of our native predaceous insects have at once required a rather decided liking for the larvæ of the *Chilocorus*. A parasitic insect of our native ladybirds has also been attacking it in considerable numbers. These predaceous and parasitic insects may be sufficient to prevent this imported ladybird from giving the benefits which it ought. They have been especially in evidence in the Washington colony but do not seem to have done any considerable damage in the more southern colonies referred to, and it may be that the ladybird will not suffer materially from them.

For a full account of the investigations briefly described above the speaker refers anyone interested to an article on the same subject published in the Year Book of the Department of Agriculture for 1902, a copy of which may be had on application to the Department.

The President: Are there any questions to be asked the Speaker before he takes his seat?

Member: I would like to ask just one question. I have learned with pleasure of the introduction of the natural enemy of the San José scale from Asia into this country. But the point that remains, is, has it been tested to determine whether it will bear our cold climate?

Mr. Marlatt : In reply I may say that in China the ladybird beetle occurs as far North as Pekin, and Pekin has very cold winters. The beetle should thrive, therefore, in Massachusetts. It will probably be of more service in Southern orchards, however, and in our experience in this country, has so far done best in Georgia. It went through last winter in Washington, D. C., very successfully, and we occasionally have very cold weather often below zero for several days or weeks at a time. In eastern Asia and Japan, it has a very wide range, occurring as far North as Northern Maine and as far South as Florida.

Prof. Corbett : I would like to have the Speaker explain if there would be any injury to the colonies of this insect by spraying orchards in which they are colonized? What, in other words, is his opinion of the use of kerosene in orchards where the insect is being colonized?

Mr. Marlatt : In the absence of any definite experience, the reply to this question will be more or less theoretical. So far we have attempted to get the owners of orchards where beetles are colonized to agree not to spray, at least the portions of the orchards containing the beetles. On the other hand, from our knowledge of the effect of spraying on allied beneficial insects in this country, I do not believe that very much harm will come to these ladybirds from such treatment. Lime salt, and sulphur spray, will certainly not affect them undesirably, because it is applied in winter when the insects are all in the adult stage and hibernating. The oily washes will be somewhat more dangerous, but undoubtedly many of the beetles will escape even a pretty thorough application of oil. The chief injury will undoubtedly come from the fact that the food supply of the beetles, namely the scale, will be mostly destroyed, and the beetles will not be able to breed extensively in sprayed orchards. Still spraying is rarely effective throughout an orchard, and usually there will be enough scales to keep some of the beetles going. Undoubtedly in large commercial orchards it will continue to be necessary to spray the trees with lime, sulphur and salt washes or other mixtures, if for shipping reasons or other it be necessary to keep the fruit absolutely free from scale. For such ends the ladybird will not prove a perfect remedy. In the long run no parasite will completely exterminate its host insect. The one is necessary to the other. When the host insect becomes nearly exterminated, the parasite disappears also, and it therefore follows that normally there is more or less of a periodicity in the occurrence of such insects as are left to the control of natural enemies. Whenever a host insect becomes abundant, the parasite develops freely and soon brings the former almost to extermination so that there may be a period of a year or several years when the host occurs very rarely. The parasite then disappears and the host insect slowly regains the ascendancy. This is the natural order. The benefit of an insect like this imported ladybird comes from the fact that it may prove an important agency in preventing the excessive multiplication and damage which the San José scale now exhibits ; in other words putting this scale insect more on a plane with our native scale species which are rarely very injurious, being kept in control, as a rule, by natural enemies.

Prof. Hansen : As I understand that the entire stock of this parasite came from two insects, would it not be necessary to introduce more to prevent the ill effects of inbreeding?

Mr. Marlatt : This point has occurred to us and arrangements have already been made with various persons China and Japan to send additional stock, and we hope to get such material this fall. In point of fact, however, there are no indications in the colonies so far established which point to a lessening in the rate of multiplication of this insect.

Prof. Beach: I would like to ask a question on the treatment of aphis. It is a little aside from the subject, but in Western New York we have recently had an unprecedented attack of green aphis on nursery stock. It has caused a loss of thousands of dollars in the nurseries, and it has been a serious pest in the orchards in many sections. The question has been asked me, and it is one I could not answer at the time,—whether in spraying with the whale-oil soap and kerosene against the green aphis there is danger of destroying the larvæ of lady-bugs and thus doing more harm than good. We have had conditions under which we thought it was necessary to spray every few days to keep the aphis in check, and yet it was not until July that the pest began to subside and we saw an increase in the lady-bug beetles. Is there danger of destroying the larvæ to such an extent as to do more harm than good, in endeavoring to treat the green aphis is any apple orchard?

Mr. Marlatt: The remarks which I have made in relation to winter spraying for the San José scale apply a'most as well to the green aphis so far as the effect of such spraying on the ladybird is concerned. The chief remedy for the aphis is a winter treatment with an oily wash. You have all doubtless observed the winter eggs of this aphis clustering in thousands, sometimes on the twig terminals. These eggs may be killed by douching the trees in the spring with kerosene emulsion or oil, as recommended for the San José scale. If this treatment be neglected, however, there is no other way than to spray throughout the early summer, and such treatment will undoubtedly be more disastrous to any ladybirds and their larvæ, than the winter treatment. As a rule. the aphis is kept in check by its natural enemies, but this season, throughout the country, there was a large amount of aphis, as reported to the Division of Entomology of the Department of Agriculture. This unusual outbreak of the aphis was evidently caused by favoring climatic conditions. You will remember that we had a great deal of rain during the early summer, and at the time the aphis was doing its principal work. These conditions prevented the parasites and predacious ladybirds from being active and were especially favorable to the breeding of plant lice. The aphis normally disappears very quickly with the advent of a dry spell favoring parasitic increase.

The President: If there are no further questions to ask of Dr. Marlatt, we have the pleasure of listening to Director Bailey, of the College of Agriculture of Cornell University, Ithaca, N. Y. I suppose it is hardly necessary to introduce Professor Bailey to an audience like this.

THE ATTITUDE OF THE SCHOOLS TO COUNTRY LIFE

L. H. BAILEY, Director of College of Agriculture, Cornell University, Ithaca, N. Y.

(Stenographer's report.)

It is a pleasure for me to say what few and informal words I have in my mind under the roof that shelters the Massachusetts Horticultural Society, for it was my privilege as a youth to be somewhat indirectly under the tutelage of this grand old organization and to receive the influence of its fine conservative idealism. I have thought in after years that the idealism and the altruism and the amateurism that characterized this whole organization have had great influence in shaping the course of my own life and studies.

I am to talk to you a few minutes this afternoon as to "The Attitude of the Schools to Country Life." At the outset, let me say that every person in the world is interested in the welfare of the child. Every citizen in every country is interested in the one institution of the public school. The one subject which more than any other dominates and controls all questions that have to do with social status and economics and politics and even statecraft itself, is education. In fact the one great fundamental question of the world, to which even governments and the evolution of the race must relate, and to which they are subordinate is the attitude of the child born today towards its own life. It is an interesting thing that the public schools are late developments in the history of the world. When schools first came into existence they were for the relatively few, for the benefit of those who were to follow ecclesiastical pursuits or of those who were banded together for some special enterprise, or for the benefit of the aristocracy. These schools developed into colleges and universities before the common schools for the people originated, and the subjects in which these schools became interested are necessarily those subjects which would apply to these special classes as distinguished from the common people. Therefore there came into the schools the ideas and the ideals which are embalmed in books, particularly those subjects associated with history and philosophy and religion and politics. But gradually as the world has grown old and as civilization has evolved, we have been seized with the democratic spirit and outlook, and we now believe that every person in the world should have a brighter intellectual outlook on life. We believe also that every government in the world must eventually be a government by and for and of the people; and if so, then the better the people the better must be the government. In other words, we have come to believe that every person in the world must be educated, and it is the duty of every government to educate its people. Gradually and almost unconsciously the school for the people has evolved, and as the school for the people has come into being the subjects which were thought to be fit for the special classes have been made elementary and have been adapted to the masses. One writer on education has said that the great progress in modern education has been that the ladder of learning has been let down from the higher education to the schools of the people. The pity is that the ladder of learning was not set on the ground and that education did not begin with the common people, the college and university being a result thereof. In other words we have builded here a fabric of educational institutions much as an architect would build his fine towers and roof lines without building first a good and sound foundation. And those of us who are in the university and the college have found, I fancy, that the universities and colleges are not the most important part of our educational system. The universities and colleges are of secondary importance to the common schools.

Let us trace, very briefly, some of the ideas that underlie agricultural education. It was more than one hundred years ago that people began to feel that in some way education was not related to the lives of the people. If I remember correctly, it was about 1789 that natural science found a place in the curriculum of Harvard University. Before the middle of the past century ideas had crystallized to such an extent that in agricultural and horticultural societies there were discussions as to the value of education for people living on farms ; and the result of the discussion was a revolt against the existing system of education, culminating finally in the Land Grant of 1852, which grant stands in history as the first grand landmark for the education of the common people in the things with which they have to do with in their daily lives. It recognizes both the obligation of Government to foster education and the necessity of educating in terms of the daily living. It is the Magna Charta of popular education. And with what kind of things do people have to do? With agriculture and the mechanic arts. Colleges were established upon the foundation of the Land Grant. Many were established before the Land Grant came into existence, one, of which I have the honor to be an alumnus, being still in existence. If I can read aright the discussion in regard to these questions in the last century, I would say that these new schools should endeavor to supply the demand for such practical instruction as would fit a man to earn his living on the farm and in the shop. When these colleges came into being the tendency of their evolution was to emulate the other colleges in the extent of their curricula and to become degree-conferring institutions for the higher education. It seems to me that the agricultural colleges have not yet filled quite the place which it was expected they would fill by those who were instrumental in founding them. It was inevitable that this should be so because we had no agricultural science, we had no agricultural leaders, and because we had very little living and vital agricultural literature. The old agricultural literature was of a wooden type. I do not blame the farmer who refused to be guided by the old-time book. The agricultural colleges have done a wonderful work. They have been the means of creating an agricultural literature, of developing leaders and establishing agricultural science on a par with other endeavors, and have materially raised the tone and resourcefulness of the country life interests of the nation. They have performed a marvellous and fundamental work. Notwithstanding, it does still remain that we need yet to fill the gap between the common school and the agricultural college.

I have brought you these few illustrations outlining what has been the purpose of the common school and what has been the trend of agricultural training to show you that however good our agricultural training has been, there yet remains new ground to be plowed, new fields to sow, and new kinds of harvests to hope for.

Let us suppose for a moment that the common schools were all wiped away, and any one of you were asked to go into any country in the United States to found a school and to make a curriculum for it. Let us suppose still further that you had no knowledge whatever of what had been done to educate the people. I am wondering what you would put into the school. I am sure that every one of you would put into it something that has to do with the life of the people who are to go to that school,—something of the weather, of the soil, of the trees, of the animals, something of the geography of that particular region,—and thereby you would fasten the child to its environment. Not so very long ago I was in a district schoolhouse in New York State, where I suppose there were 45 pupils, of various ages, I asked all those children who were born on farms to raise their hands and all hands but one went up. Then I asked all those who desired to live on farms to raise their hands, and only that one hand went up. What are our schools for? What, in the name of the happiness of children, what, in the name of the stability of our political institutions,—what do our schools exist for if not to put the child into sympathy with its own life? A man may know all there is of astronomy and geology; he may know all there is of all literature, but if he has not contentment and sympathy with his own life, it availeth nothing. In the name, therefore, of 25,000,000 persons who live on farms in the United States; in the name of more than half that number who are in shops and factories, let us begin to teach the things by which men live! Greek and Latin and Calculus are no more divine than machines and potatoes are; and every subject in which men are interested can be put into pedagogic form and be a means of training the mind. Any of you who are good teachers can train a child's mind by the study of a plant just as well as you can train it by the study of a Greek syllogism; and when you have trained his mind, you have put him into sympathy with the things in the midst of which he lives. We live in the midst of common things. When I left the public schools I thought that government was something with which only great men who wear plug hats had anything to do, and with which I should never be brought into contract. But now the good teacher believes that the first lesson in civics is in the government of the school, and the second in the government of the school district, and the third in the government of the town and county. And what are nations, except school districts grown old and big? When I began geography I began with the universe, and then came down to the solar system, and finally to some of the external features of the earth. Now the good teacher begins geography with the brook or the hill or the cape or the promontory in her own neighborhood and goes on and out developing the child's mind in a natural way until finally it comes into cognizance of the things that his mind can grasp. A child asks what a stone is before he asks what the world is.

The schools are coming to this new point of view. I would not be a reformer even if I could. Felix Adler has said: "That the reformer is a man who storms at the gates of the impossible." But I would help along the course of evolution. One of the most important departures that has come into our schools is the kindergarten, which is fundamental, as it rests upon the natural development of the child's mind, putting it first into contact with things and phenomena. For when we first put a child into a book, we put him into a world of unrealities and take him out of his environment. These emancipated schools will teach in terms of the common things with which a child has to do. It does not matter so much what the subjects are provided that the child is interested in them and the teacher has the power to formulate the knowledge so that it can be taught. We undertake to develop the mind of the child, and the means by which the mind is developed are secondary and incidental. We believe in democracy in education. Every man should receive the benefit of a public school education, and yet the means whereby we are to reach the multitude are the means in which the few only are interested. There are in this country 5,000,000 farms on which poultry is grown; there are millions of city and village lots on which poultry is grown. I am not interested myself in poultry-growing as a business. I couldn't make a hen lay unless I cut her head of; but I am interested in men who raise poultry. I would reach men by means of the old hen.

This new development in the ideals of the public school really has no name which will set it off from the older ideal. As a makeshift we have used the term Nature-Study; and many of you have thought that Nature-Study is the examination of frogs or observing how seeds sprout or studying the development of a bug. Nature-Study stands for point of view, attitude towards nature and towards the child's own life. It would put a child into touch with the things with which he lives. Every child is interested in something, and therefore every full-minded child in the world can be educated. But if we begin by supposing that we can educate every child in the world by means of the old line subjects, we shall find that many a boy prefers to spend his time midway between the home and the school, even if he is licked in one and thrashed in the other.

Nature-studies are coming into the schools of the country rapidly, sometimes I fear too rapidly. It matters not whether the word Nature-Study persists very long or not, if only we hold to the substance of it, which is to put the child in sympathy and contentment with its life. Not so very long ago I saw two sisters standing on the steps of their home bidding goodby for the day to their husbands, who were brothers, going off on a day's outing. One of the women looked at the sky and said: "John, it is going to be pleasant. I know you will have a good time to-day." The other one looked at the sky and said: "Jim, I am afraid it is going to rain." There was the same sky, the same day, but there are two women, two different views on life. If I could accomplish only one thing in the world and feel that in accomplishing it I had lived a good life, it would be to correct the habit of finding fault with the weather. The weather is never bad, because it is not a human institution. Our attitude toward the weather is a part of our outlook on life, as to how we take things, and it colors our points of view in regard to many questions. It is central to the man and symptomizes the course of his thinking.

Now this new type of education, which is as surely coming as the sun is to rise, is one which is not to be known by its mere learning. We often make the mistake of supposing that if only we can give a child information, thereby are we educating him. The formal methods of teaching and the mere information we import are after all of very secondary importance. The vital thing in this teaching is love and sympathy with the child and appreciation of its experience and point of view.

A little child sat on the sloping strand
Gazing at the flow and the free,—
Thrusting its feet in the golden sand,
Playing with the waves and the sea.

I snatched a weed that lay on the flood
And parted its tangled skeins,—
I traced the course of the fertile blood
That lay in its meshèd veins.

I told how the stars are garner'd in space
How the moon in its course is roll'd,
How the earth is hung in its crystalline place
As it whirls on its orbit old.

The little child paused with its busy hands,
And gazed for a moment at me,
Then dropped again to its golden sands
And played with the waves and the sea.

The pivot or the pivots around which our civilization is crystallizing are changing. In this old New England the pivot was the town-meeting, which has developed the full flower of democracy. In the South it was the court-house, whereby has developed its ideal aristocracy. In many places it was the church, or the church school, whereby was developed an ecclesiasticism. In some regions of the West it is the ditch-meeting, whereby there comes the domination of a special industry. But the point of crystallization in the future in the whole country is to be the public school.

You will pardon me if I make a reference to some of our own work and conditions, which illustrate some of the things I have in mind. It is time the universities and the colleges took a more direct and immediate interest in the common, elementary schools. At the university whence I come we are now giving a part of our horticultural department to the development of school-gardens, in which children of the public schools of the city of Ithaca shall work for the purpose of obtaining mental training. These gardens will afford laboratory material whereby students of the university who are to make teachers may come into contact with the living problem of the child. And a part of that school-gardening enterprise is to be a country schoolhouse, which may be built for say $1,000 or $1,500, and that will be a model of good, simple architectural lines with nothing about it of the "millinery" architecture which the country has borrowed of the city. I hope it will have good New York farm scenes on the walls. Here the children may come for their exercises and their lessons under the guidance of young men and young women who are studying to teach. I hope that the time will not be far distant when at least one of our great universities will come to a point where "a little child may lead them."

All this iconoclasm will come so gradually, so universally that we shall scarcely feel its coming. We are just now in a period when we feel that the school curriculums are overcrowded and we cannot put in another exercise. The difficulty is not that the new is coming, but that the old does not give way. The whole question of agriculture in the public school is to my mind incidental and secondary. First of all, we must direct the child's mind towards the problems in the midst of which it lives and put it in a sympathetic attitude with its life. Not so long ago, Professor Earl Barnes made some inquiries in a country region of New Jersey to find out what the children hoped to do when they become grown. Of the children of seven years, 27 per cent. hoped to follow some line of country business; of those of 14 years, two per cent. decided to follow country life. Why, he asks? There are many reasons,—economic, social, otherwise. But one of the reasons, to his mind, is that the country school is taught by the city school teacher, who goes back to the city on Friday night, who talks in the manner of the city, dresses in the way of the city, and all unconsciously to herself and pupils draws their attention city-ward, leaving all the attractiveness and beauty of the country untouched and undeveloped. All this must be changed. The tendency of the school is such that it will correct itself in the course of a generation. What then, I want to say to you, is that the whole course and tendency of the public school is undergoing an evolution, which is fundamental to the very structure of the school. Then, as a secondary matter, in the academic and high schools we shall gradually introduce technical subjects for those who choose.

As the years roll by, I find myself more and more looking beyond the scientific facts and data that we so assiduously collected and that mean so much for the progress of the race, and the thing which I see behind it, constantly more fully and beautifully outlined, is the face of the child. We have established our agricultural stations, and we are to give the knowledge to the people. We give it to the people, by bulletins which are read by perhaps one per cent. of the farming population. The proper way is to give it also through the schools. I hope that the agricultural station with which I am connected will never issue a bulletin some part of which will not be put into some book or paper for the teaching of the children of the State.

There are three things to be considered in the agricultural teaching of the future : the teaching of the university and the college student (and I will never lower the standard) ; the developing of agricultural science ; the reaching of the common people in their own schools. The greatest unsolved education problem today is that before the agricultural colleges, because one-third of our people make their living by the plow and the others live because these follow the plow. All this multitude of rural people must be reached in terms of their own lives. The whole question, therefore, of the rural schools is one for the agricultural college and the solution of the question is to come largely from the instruction and example of those institutions. For the past years the colleges have put the emphasis on how to grow products ; the next ten years will see the interest shifted to the farmer himself, how to reach the man who grows the crops. And every school must be the center of interest of its community. It must come into relations with the life of the people and cease to teach only those things that are not familiar to its people. Then every schoolhouse will have a voice and it will say :

I teach !
The earth and soil
To them that toil,
The hill and fen
To common men
That live just here ;

The plants that grow,
The winds that blow,
The streams that run
In rain and sun
Throughout the year ;

And then I lead
Thro' wood and mead,
Thro' mould and sod
Out unto God
With love and cheer,
I teach!

FRUIT GARDENS:

SENTIMENTALLY AND PRACTICALLY CONSIDERED

The President:

I hate to come back to this earth after all the poetry and wisdom and truth that we have been listening to, but I hope that as we come back to our work we shall certainly keep with us some of the good things that Professor Bailey has told us. Now we will have an address by Mr. J. Horace McFarland, of Harrisburg, Pa., on FRUIT GARDENS.

I. FRUIT GARDENS: WHAT THEY ARE AND WHAT THEY ARE FOR.

Mr. President; Members of the American Pomological Society; Ladies and Gentlemen:

In asking me to speak upon "Fruit Gardens: What They Are, and What They Are For" your very capable secretary has perpetrated upon you a stupendous joke. I think he knew perfectly well that I do not know anything about fruit or fruit gardens, and he thought therefore that there could not be any danger in anything I could say to this revered, serious and honored society upon the subject that is involved in its title. If, therefore, I wander from the letter of the subject it is because I cannot help myself.

I read in that wonderful book we all know more or less well that the Lord God planted a garden eastward in Eden, and he placed therein every tree that was pleasant to the sight and good for food. You will please note that there is nothing at all about planting a fruit garden, or any other special kind of garden. The Creator planted a garden, and primarily it was a garden in which there were trees that were pleasing to the eye. Only secondarily were the trees "good for food."

Therefore, instead of talking much about fruit gardens, I want to talk about a garden in which fruit occurs and a garden which shall be a means for the education of the soul as well as for the sustentation of the body.

What is the ordinary farm fruit garden? It is usually a weedy little corner near the house, in which the women of the family are permitted to grow a few blackberry briers, currant bushes and the like to satisfy the longing of the head of the family for pie and preserves. It is usually adjacent to some decrepit old trees in what is called an orchard, closely attached for convenience to the hog pen—with the idea that it is easier to bring the hogs to the apples.

You will recognize the picture. My friend Hale does not have that sort of a garden in Glastonbury. In the goodness of his heart he has found that fruit is fair to look upon and so he has planted much fruit in a fine garden, as any of you will find who are invited to South Glastonbury.

Do not let your greed for money blind you to the beautiful in nature, and do not be selfish with this beauty when you come to recognize it. If the true garden is to be of any use to others it must be placed where people will have the good of it. Why not, therefore, place fruit trees along our roads and lanes? I think myself that one of the chief values of the fruit tree and the fruit plant is in their ornamental characteristics. We need more fruit altruists. Much has been said here this afternoon upon altruism, which is only another name for unselfishness. A selfish man will plant a tree for himself only, but when he gets to be an altruist, and unselfish, he will plant for others. He will not be afraid to plant a cherry tree along his farm lane, and he won't be much provoked when he sees the small boy climbing up to get the luscious fruit.

There is much in the treatment of fruit in relation to beauty which is worth your consideration. Perhaps every man in this room has ornamental planting of some kind about his place, particularly about your homes. You have planted the blue spruce because it is blue and distinct, and you like the color and the distinction. You have doubtless planted other things which were of some benefit and pleasure to you, but you have left fruit out of the calculation. Now, tell me, what can be handsomer in the corner of a border than a fruit tree, say a Kieffer pear tree loaded down with fruit; or what can be more beautiful than a fruiting Ben Davis apple tree—and surely both these fruits had better be considered as ornaments than as edible! Has the eye ever been gladdened by a more beautiful object than a full Baldwin apple tree, with its globes of dark red; and surely a Japan plum tree in fruit is brilliant and pleasing to the eye.

One day I was walking in one of the great old forests yet remaining to Pennsylvania, and I paused in admiration before a magnificent old hemlock tree. With me was an old man, one of the natives of the locality. As I looked at that tree I said, "Isn't it splendid! Isn't it a fine thing!" to which he replied, "Yes; I calc'late it is going to cut about five dollars wuth of bark." He didn't see it in any other light than for its money value. His point of view was purely practical, and not altruistic; and yet it is a fact that if we care for and cultivate our trees, making them as beautiful as possible, they will take care of our pocketbooks so much the better when we come to see the fruits.

I have been looking recently at a splendid great huckleberry bush at Eagles Mere, cared for by three good women who would not permit one berry out of the mass of bloom-covered fruit to be taken. They thought it was worth a good deal more to look at than to eat! Not long since, I traveled a mountain road bordered all along with the ferns, trees, plants and bushes of that region. A long wand from a great blackberry bush arched over my head, the fruit in all its colors of green, red and black—a notable object. I paused to admire it; but, do you know, the driver of the team was hardly willing that I should take the time to photograph "only a blackberry brier!"

Among the fruit trees growing about my old home was a fine crab apple tree. It was a sort of a duplex tree, because half of it bore fruit one year and the other half the next year. It never failed to have its measure of blossom and fruit, and with its brilliant color it was the chief glory of the quaint old garden for long months.

Across the Susquehanna I know a man who long years ago planted a great avenue of cherry trees, and he doesn't say a word if you stop there, climb a tree and take some cherries. He could have planted a row of fir trees, or maples, or poplars; but he didn't. He planted cherry trees, and the road has come to be known as "Cherry Lane." He was guilty of doing the uneconomical thing in planting that fruit away from his eye, and for the public. He was a benefactor, a real altruist. I hope to know of many such altruists springing up among the fruit of men of this Society; men who are willing to abolish the fruit garden, while they mix the fruit planting with everything else beautiful and sightly.

Sunday last I went with a party for a walk. We went into a patch where we found a large yellow flower. I picked one of them and carried it along home with me. I was asked by many what it was. I answered ambiguously, provoking curiosity, until finally I reached my good mother, whom I asked, "What is it?" She said, "I know its name, but it has escaped me for the time being—it is a pretty long name." I said, "It didn't seem to be such a long name when you made pumpkin pies from the fruit that follows this sort of flower!" The next day a gentleman asked me, "What was the name of that curious yellow lily you carried yesterday?" All had failed to recognize the pumpkin blossom, really a very beautiful thing, though few thought it fine or beautiful after learning what it was. It is for the same reason we do not recognize the beauty and elegance and decorative possibilities of the common fruits we know so well.

When you come to Professor Bailey's platform of seeing the beauty all about you, the beauty of common things, you will have jumped away up, and you will secure a great benefit to yourselves in having a new joy in your everyday existence. Why, there is nothing common or sordid or unpleasant about our fruit trees and plants! Can you think of anything more beautiful in the early spring and summer than the blossoms of the raspberry and blackberry? Which of you can suggest a better thing for the corner near a building, to break the straight lines than a little twisty quince tree, which will bear, if you are half-way decent to it, yellow globes of beauty after its exquisite blossoms! A Japan plum tree in full fruit—is it not far more novel and ornamental than many a long-named plant that bears nothing edible? And the first thing you see in the spring is the great white sheet of bloom that covers the apricot tree in its glory. Let us learn from the Japanese, who pay as much attention to their flowers as they do to their fruit, who are willing to love the common things, who have sense enough to have a great feast of cherry blossoms, and who appreciate the beautiful trees and plants that are all about them.

I tell you, my friends, those of you who must look on the commercial side of things, that when you begin to advance a love for the beautiful in fruit trees and plants, you will help along your own businesses. More trees will be planted; more fruit trees will be set in corners. The strawberry will be considered more desirable because it furnishes a bloom in the spring which is far finer than the decrepit old geraniums, carried over the winter can possibly produce. And there will certainly be no quarrel with a determination to treat the "Strawberry-raspberry" as a purely ornamental plant!

Gentlemen of the Pomological Society, love your fruit trees and plants because they are beautiful. Study their blossoms, follow them as the fruits grow and mature, and show their colors; respect them afterward and give them as good care as you give your expensive ornamentals; and you will be very glad that you have mixed them up in your gardens and made it as God intended when He set out the Garden of Eden, full of things "pleasant to the sight, and good for food."

II. THE MINNESOTA HARDY FRUIT GARDEN.

By Samuel B. Green.

Professor of Horticulture, Minnesota Agricultural College.

At one time it was reported that Minnesota was so far north and had such an inhospitable climate that it would never amount to much as a habitable region, but this has been shown to be an error. Likewise it was stated and generally believed that Minnesota would never be a fruit producing section, but we are fast showing that it is possible to have a good degree of success in horticulture in this section.

This has come as a result of a careful study of our conditions and the working out of a system of horticulture of our own. The methods of our eastern sections must often be considerably modified in successful practice here.

Minnesota is a large state, being practically 400 miles from north to south and about the same distance from the extreme east to the extreme west, and in it are found a great variety of climates. It is here also that the natural growth of forest trees in its continued battle with the grasses of the prairie has found its westernmost limit, and about one-half of our state is prairie and the other half originally heavily timbered. We also have many lakes that modify the climate. It will be seen therefore that we have a great variety of conditions.

The fruits grown in this section are much more limited in number than those of more favorable climates. It should be understood, however, that the soil and climate of a large portion of the area of this great state is well adapted to fruit growing, and that it is limited chiefly by a few very cold days in winter, and the problem of the Minnesota grower has been, how to protect his fruit against such trying conditions.

The first settlers of this country planted out such varieties of apples as the Baldwin, Rhode Island Greening, Gilliflower, Talman Sweet, Golden Russet and a host of other varieties, which were successful in the Northeastern states, but they have all been found wanting here and it will be noticed in looking over the latest fruit list of the Minnesota Horticultural Society, that the varieties recommended for cultivation contain a few of the Russian apples and a few seedlings of local origin. These varieties have been selected as the result of the testing of a large number of varieties of the old lists, of Russian and of seedling sorts.

In looking over this list many fruitmen would be struck by the absence of pears, peaches and quinces. Of pears, we can grow a few Flemish Beauty, and occasionally some other of the very hardy sorts, but the growing of pears in a commercial way is out of the question. Peaches may be grown in a small way, provided the trees are protected in winter, but this is scarcely attempted except in a small way in amateur fruit gardens.

In looking over the list of plums one would see that the varieties cultivated were all of the Americana or nearly allied types, and from among them we have got some most surprisingly good varieties—considering the short time this species has been cultivated. He would see, however, that we can grow a goodly list of grapes and of the smaller fruits. He would also notice that we have a list of native fruits that we recommend for cultivation, including the Juneberry, the Sand Cherry and the Buffalo Berry. Such sorts as these latter are specially recommended for the fruit gardens of the severest sections.

In order to make this a practical talk upon hardy fruit gardens for the amateur, which is the subject which I am supposed to talk upon, I am going to recommend the varieties for cultivation that it seems to me would be best for this section, for I believe in this way I can interest you more than in any other treatment of the subject. If the amateur garden of this section was in a severe location, but with good soil and good air drainage, I would recommend, in the line of apples, that he plant out Oldenberg, Charlamoff, Patten's Greening and Wealthy. If he has a specially good location and wants to experiment he might take a much longer list, but this is the cream of our planting list for severe locations in this section. I would recommend that he plant the trees about 20 feet apart each way; that he plant them deep in the soil and if the soil is sandy, that he plant the trees at least 8 inches deeper than they grew in the nursery, and on a firstclass fruit soil I would recommend that he plant them six inches deeper than they grew in the nursery. I would also recommend that he incline the trees slightly to the southwest, since the tendency of the trees in this section is to tip over to the northeast, due to the fact that the prevailing winds are from the southwest here in the growing season. It is generally best to keep the soil cultivated during the growing season, as our greatest foe is drouth, and clean cultivation tends to retain the moisture in the soil. The trees should branch out about 2½ ft. from the ground and the trunk be protected from the sun either by a covering of burlap or in some especially severe locations with a wooden box filled with soil. One of the worst enemies of the apple tree in this section is sun scald and shading the trunks entirely removes the danger from this source. On the approach of winter the trees should be mulched to protect them from root killing. This mulch may consist of any strawy material, or stable litter, and even a small amount of it will often protect from root killing, which is liable to be especially injurious in severe winters when the ground is bare, and it should be generally understood that in this section we are quite likely to have the ground bare in winter.

Some of our Minnesota growers think that the crabs are not worth growing, but as a rule it is desirable to grow such fine hybrid crabs as the Sweet Russet, Minnesota and Florence, which are productive and hardy.

Of plums probably the best varieties to plant are De Soto, Wyant, and Surprise, but this list could be easily made longer by adding more of the many good varieties that are now grown. A desirable hybrid between the common plum and the sand cherry is known as the Compass cherry and is quite popular for canning and jelling purposes with those who know it. It is wonderfully hardy and productive.

If it were not for the fact that it is necessary to cover our grapes in winter we could easily compete in the growing of grapes with any section of this country since we have a large amount of land that is admirable for this purpose about our many lakes and rivers. In such sections we can now grow all the varieties of grapes that are grown in New England, including Brighton, Delaware, Agawam, Concord and similar varieties, but we must cover them in winter. Our commercial growers find the Delaware the most profitable kind to grow, since the foliage here is but little liable to the mildew that is so often troublesome elsewhere.

If the fruit garden is in a severe location, then I would recommend that after the grapes have been pruned and laid on the ground and covered with soil in the winter that a slight mulch be laid over them to prevent root killing. What we need to-day in Minnesota is a farmer's grape that needs no winter protection here, even if it is not of best quality, and this is what the experiment station is trying to originate, and which we think we have nearly—if not quite—obtained.

Of raspberries we grow the varieties that are commonly cultivated through the northern states. We have our share of leaf curl and anthracnose, but I think these diseases are no more abundant here than in other raspberry sections. Most of our fruit growers think that it pays well to lay their raspberry canes on the ground in winter, since in this way danger from winter killing is almost entirely removed in favorable locations.

Of the blackberries we grow Ancient Briton, Snyder, Badger and others, but these are not nearly so sure a crop as the raspberries.

All the varieties of currants grown in New England succeed in Minnesota, but for the home fruit garden such varieties as Red Dutch, White Grape, Victoria, Stewart and Long Branch Holland are much better adapted than some of the weaker growing kinds.

Of gooseberries our best sorts are Houghton, Downing and Champion. In very severe locations I think it a good plan to cover the fruiting wood of the Downing with earth in winter.

Strawberries here are not so certain as in some other sections, but we have a good share of success with them and their culture is recognized as a safe commercial venture. It is important, however, in winters where there is little snow that the plants be covered with a heavy mulch, otherwise the fruit produced will often be imperfect, and a large proportion of it what is known as "nubbins."

For the farmer's garden of this section I recommend that the rows of strawberries be placed six feet apart; that the bed be thoroughly cultivated through the summer, and on the approach of winter that it be mulched with a few inches of straw, which should be increased to at least eight inches when winter has fairly set in. Such protection as this always insures a crop of berries even in severer portions of this state, and as straw is of little or no value the cost of mulching is merely one of labor. In the spring the straw should be raked over the plants and put between the rows where it will act as mulch, and if a late frost is threatened when the plants are in flower it may be used as a covering. Such treatment of the strawberry bed in this section always produces a good crop of fruit.

We have many problems here that are different from those of the eastern and northeastern states, and our horticulturists are at work trying to solve them by raising varieties better adapted to our condition, and by the adoption of methods which will make more largely for success.

III. FRUIT GARDENS OF THE PACIFIC COAST.

E. J. WICKSON, University of California, Berkeley, Cal.

If I could have the advantage of hearing Mr. McFarland's discussion of what fruit gardens are and what they are for, before attempting to write briefly upon the subject assigned to me, I am sure I could proceed more intelligently. My own notion of a fruit garden is a limited area of good soil: (1) strictly and strongly enclosed for the privacy of the owner, his family and friends and for the protection of the products against trespassers; (2) planted with a large number of fruit varieties growing as far as possible upon shrubs, vines and trees of dwarf habit; (3) all fruiting plants receiving intensive and expensive culture in the lines of soil improvement and enrichment, moisture supply and protection against unfavorable winds and temperatures; (4) administered by an amateur by his own labor, or by his outlay for a professional gardener; (5) the whole projected and maintained without idea of commercial profit.

If this notion of fruit gardens be tenable my writing of them may be very brief indeed, for, to the best of my knowledge, there is not such an establishment in California.

There was something in California a century ago which approached nearer to a realization of this definition of a fruit garden than anything now existing. The old Catholic Missions, of which there were fifteen scattered along the coast through about 400 miles of distance, had, for the most part, gardens behind high adobe walls to screen the padres and their fruit from intrusion. These gardens contained several kinds of fruits, the trees were fertilized and irrigated, the work was largely done by the owners and there was no commercial motive in the gardens—though some of the missions had outside vineyards of considerable area in which they used the labor of the Indians they tamed and from which they exported a wine product to Old Mexico. But, though the old Mission fruit gardens furnished facilities for retirement and refreshment, they did not involve sufficient high horticultural art to meet the requirements of a modern conception of fruit gardening. The varieties were mostly seedlings, except that the fig, the grape and the olive were of the same type at all the establishments, owing, no doubt, to propagation by cuttings. The culture was rude and the gardening policy generally vastly inferior to that prevailing in Europe at the same date. The Mission gardens reproduced the old Spanish garden of the seventeenth century when the missionary effort in Lower California began, and maintained this type unaffected by the improvements which later years brought to its European prototypes.

Even the old Mission gardens, such as they were, had passed their best estate before the American occupation. The decline of many of them began when the Mission properties were secularized by the Mexican government in 1834, though there were a few instances in which they escaped ruin and delighted with their fruits the American explorers who preceded the inrush of the gold-seekers of 1849.

It is interesting that the Americans began fruit growing in California upon the garden plan rather than upon the orchard plan. In the early 50's there were fruit gardens, in which dwarf trees were largely used, near the larger towns of that early day. This apparently arose from a misconception of the necessities of the situation. The Americans proceeded at first upon the supposition that all fruit trees and vines required irrigation to carry them through the long, dry season, no matter what the depth and character of the soil and the amount of the preceding winter's rainfall. The operations at the Missions encouraged this belief, and it was accepted as settled that the greatest number of trees in the smallest possible space could be irrigated most cheaply and successfully. Even when it was shown that constant surface cultivation during the dry season would conserve enough moisture in the subsoil to sustain growth and fruit bearing deciduous trees and vines, the thought remained that dwarf trees set close together would be best even under this new policy. But this conception was speedily forsaken and the policy of growing low standard trees on free stocks, sufficiently separate to allow each a good share of air space and moist subsoil, was accepted as early as 1856 and has prevailed so strongly since that time that a California type of low standard fruit tree may be claimed to exist and to exist so largely as to produce an impression of striking uniformity upon horticultural visitors from all parts of the world. But even the fruit gardens of the early American settlers did not answer the requirements of the notion of a fruit garden laid down at the beginning of this paper. They were not closed in by garden walls. The owner could get all the meditation he needed without a wall and he could protect his property more cheaply with a dog and a gun. Nor was the ruling motive in a fruit garden present for the gardener enjoyed more the thought of the dollar he could get then of the beauty of the peach which command it. In fact, at the very beginning the commercial idea in fruit growing asserted itself among the American settlers and it has never relaxed its hold.

Perhaps the nearest approach to our ideal of a fruit garden was attained in the plantations of the pioneer General Sutter, who set out on the banks of the Feather River in the Sacramento Valley a " unique landscape garden nearly every article in which is productive of fruit." An appreciative contemporary writer remarked that " the arrangement of the fruit trees is peculiar, a large portion of them being set on either side of the broad avenues opening through the extensive grounds in various directions, imparting to the whole an air of picturesque beauty seldom seen." What would have come of this if the planter's fortunes had not failed, is hard to say, but it was clear to others at the time, that such an arrangement, which gave large areas of roadways incapable of cultivation between the trees, endangered their thrift because of loss of moisture or, if this were furnished by irrigation, the grower would be handicapped by the cost of it. And so the element of the picturesque passed out of our fruit growing nearly as soon as it entered and the orchard plan of trees or vines equally dividing amongst themselves the area of well cultivated soil, with the least possible allowance for special roadways or avenues, was chosen early and still rules. To stir every inch of the surface and to do it well at the least cost, banishes permanent roadways from the areas given to the trees and strikes down all barriers surrounding these areas if possible, so as to admit of free use of the horse in cultivation. The result is that the fruit plantings even on suburban places are small orchards, rather than gardens and orchard policies prevail with them. Even on our finest places where the areas given to ornamental trees and shrubs and to lawns may be laid out upon rational garden and park designs, the fruit trees are nearly always carried beyond them and planted in orchard form. Then, too, the idea of doing a little business in fruit is so attractive that the orchard exceeds in area all home needs and its varieties are chosen largely upon commercial considerations.

I return, then, at closing, to the doubt spoken at the beginning as to whether, strictly speaking, there is such a thing as a fruit garden in California except in the back-yards of suburban homes and in such cases city activities so engross the owners that they cannot attain high grade as amateurs. I am aware that we have a few people with ample means and leisure with discriminating tastes and with enthusiastic delight in their outdoor possessions and avocations. I believe we shall have more of this class as the years go on and that the wonderful possibilities for amateur successes and delights which a combination of temperate and semi-tropical conditions affords, will in due time, in the next generation, perhaps, give us fruit gardens which it will be worth while to cross a continent to see.

THE RELATION OF COLD STORAGE TO COMMERCIAL ORCHARDS

G. HAROLD POWELL,

Pomologist in charge Fruit Storage Investigations U. S. Department Agriculture.

The most remarkable development in commercial fruit growing in the United States has taken place within the last thirty years following the opening of the interior of the country by the transcontinental railway and by more recently completed lines. Fruit growing is no longer an infant industry, but ranks as a highly specialized type of American agriculture. In 1900 there were 367,164,694 fruit trees of bearing age in the United States, the product of which amounts to 211,736,325 bushels, valued at more than $83,000,000. More than 200 million of these are apple trees, which yield from 40 to 60 million barrels of fruit in a normal season. In the decade from 1890 to 1900, about 80 million apple trees came into bearing, or an unusual average increase of nearly 7 per cent. during that period. Other orchard fruits have increased even more rapidly, though none have approached the rank of the apple among American fruits.

The question often suggests itself, "Is there likely to be an overproduction in fruit growing if the enormous orchard plantings of the present continue, and is the time likely to come when the selling price will not equal the cost of production or even of transporting the fruit to market?" The ghost of overproduction has haunted every growing branch of American industry, and agriculture is not exempt from the visitations of the skeleton. It is reassuring at the outset to know that history has yet to record a universal overproduction in the products of agriculture or of other industries, and there are many factors which indicate that the markets of the world will consume the products of commercial orcharding for generations to come.

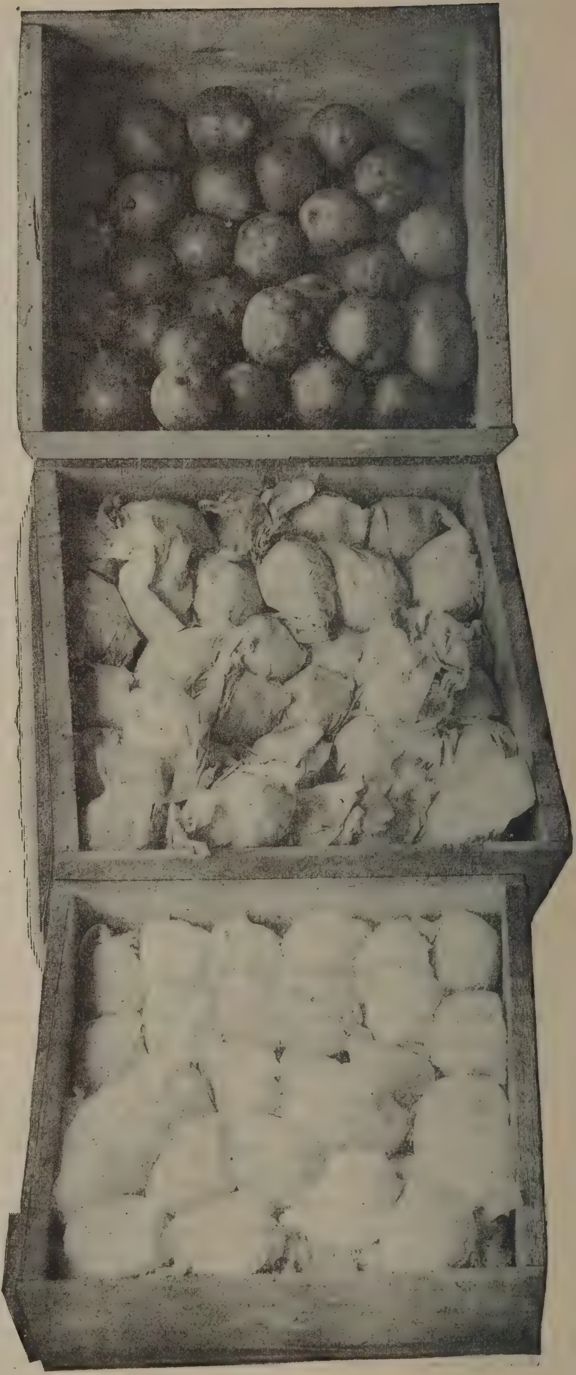
There is a growing demand for fruits of all kinds throughout the civilized world. The desires of the human heart increase as the standard of life rises. The wealth of the individual in the United States has multiplied more than a thousand per cent. in the last century. The poorest in the land may consume in the future what the richest use to-day. There are millions of people in the world who will become consumers as they advance from the ruder stages of civilization. Fruits are becoming staple in countless homes where formerly they were luxuries, and the present demand has developed with the rising standard of life largely within the last generation. Who can look down the vista of the future far enough to foretell the enormous increase in the use of fruits by all people as civilization advances? New markets are opening and old ones enlarging both at home and in foreign countries.

In the decade preceding 1870, the average annual apple export was 99,316 barrels, an increase of 155.5 per cent. over the preceding decade; from 1870 to 1880 it averaged 196,310 barrels per year, an increase of 97 6 per cent.; from 1880 to 1890, 546,987 barrels per year, an increase of 179 6 per cent.; from 1890 to 1900, 575,548 barrels per year, an increase of 5 2 per cent.; while from 1900 to 1903, it has averaged 999,545 barrels per year, an increase of 73.2 per cent. In 1902–3, the exports reached the enormous sum of 1,655,247 barrels of nearly twice the amount of the exports of a preceding year, except the phenomenal apple season of 1896. Yet so insignificant has been the development of the foreign markets that less than twenty per cent. of the apple exports of the United States were used outside of the markets of the United Kingdom in 1902.

Who is bold enough to set the limit to the exports of American fruits when our production increases so largely that it is necessary to seek outlets in other foreign countries, and when the government of the United States systematically attempts, like its Canadian neighbor, to encourage better facilities for shipment and to exploit the fruit markets of the world?

The cold storage warehousing business is reducing the possibility of a so-called overproduction, especially in the apple, by equalizing and extending its distribution throughout the year. Not long ago the apple crop had to be sold quickly after harvesting near the areas of production, to prevent excessive waste from decay.

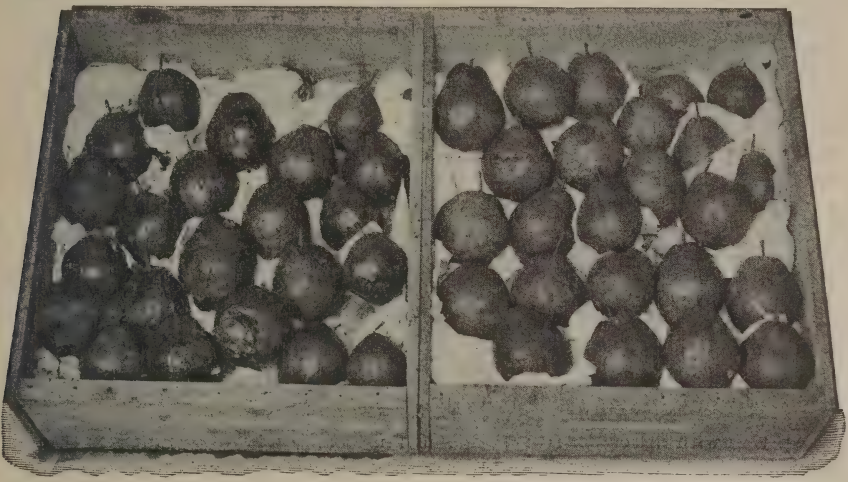
The quantities received were often so great that the large markets were congested at the height of the season, when enormous amounts of fruit were sacrificed for less than the cost of freight. At the same time



Kieffer Pears removed from cold storage on Jan. 20, 1902. Fruit picked Oct. 21, 1901, and placed in storage on the following day. Nearly 50 per cent of the unwrapped fruit decayed while that in parchment wrappers (lowest figure) and in unprinted newspaper kept in perfect condition.

the supply in many of the larger distant cities and in most of the smaller interior towns was unequal to the demand, while all of the markets were practically barren of apples during a greater part of the year.

Fruit markets are especially subject to violent fluctuations in supply and demand on account of the perishable nature of the product. The crop must be sold soon after harvesting to prevent undue waste, or the ripening processes must be checked and the distribution of the crop equalized throughout the year if gluts are avoided. A glut in the fruit market is the result of a temporary over supply of fruit. It is the outcome of inadequate facilities for distributing the fruit widely, and of the attempt to force the crop on the market in a short space of time. The danger of gluts in the fruit market, as in every industry, is reduced as man masters the art of handling the temporary over supply by storing it and distributing it at home and abroad in time of greater need.



WRAPPED KIEFFER PEARS REMOVED FROM COLD STORAGE 320° F. ON MARCH, 1902.

Fruit in both boxes picked Oct. 21, 1901, that on the right being placed in storage the following day, while that on the left was not stored for ten days. [Powell, Bulletin 40, Bureau Plant Industry.]

In its broadest economic relation the cold storage business is destined to equalize the distribution of fruits and to increase the demand for them both in domestic and in foreign markets. It holds the same relation to the fruit industry, especially to apple culture, that the great warehouses bear to the older grain, cotton and tobacco industries.

Cold storage is likely to have its most important influence on the development of commercial apple growing. The varieties adapted for storage ripen slowly and can be handled more readily than other fruits from the orchard to the warehouse. They retain their delicate aromas and flavors when properly handled, and if removed from storage in good condition, may be distributed in cool weather, or under refrigeration in warm weather, to the most distant domestic and foreign markets.

Quick ripening fruits, like the peach, summer pears and small fruits are not generally adapted to cold storage treatment. They ripen in hot weather, and as the ripening processes go forward rapidly as soon as the fruit is picked, the end of their life is quickly reached unless the ripening can be checked by immediate storage. The delicate aromas and fine flavors are readily lost by the absorption of odors from the storage room on account of the more rapid processes of respiration and transpiration and the accompanying quick chemical changes in the summer fruits; and as the fruit is removed from storage and used in warm weather it often deteriorates before it reaches the consumer.

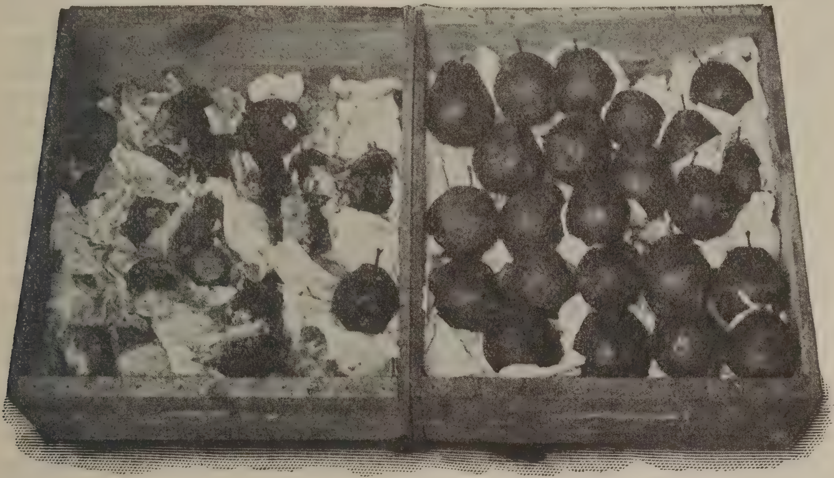
Cold storage may be useful in holding back the summer fruits for a few days to relieve a temporary over supply, or to maintain a supply between the ripening of the fruit in two regions, or to extend the supply a short time beyond the normal season. The storage of summer fruits is a critical business under the best conditions in the average warehouse and with the usual method of commercial fruit handling. To be successful, the fruit must be well ripened and perfect physically; it must be handled with scrupulous care to prevent bruising; it must be stored immediately after picking in small packages from which the heat can be driven quickly, in a warehouse in which the air is thoroughly sweet and is not contaminated with the odors from other products, it must be removed while still in perfect physical condition, kept as cool as possible after removal from the warehouse, and sold at once. Under these conditions berries may be stored in a low temperature a week, peaches two weeks, and Bartlett pears a month or longer, if there is a demand for the fruit beyond that period. The mistake is frequently made of holding cold storage fruit beyond the season when the demand for it is active, as under these conditions it is difficult to sell it even if the fruit is in prime condition.

The apple belts of the southwestern and middle western parts of the country where the crop frequently ripens in hot weather, must depend on refrigeration if commercial orcharding is to be permanently successful. The danger of rapid deterioration of the fruit and from glutted markets is greatest in such climatic regions. Fruit ripens quickly when severed from the tree, especially in hot weather. If it is delayed in packages or in piles in the orchard, or if shipped or delayed in hot cars in transit, it may already have approached the end of its life before its destination is reached. Those sections are at a disadvantage in competing with the cooler fruit belts in commercial orcharding unless provision is made for local storage or for the transportation of the fruit to distant storage houses in warm seasons in refrigerator cars. The enviable reputation of the fruits of New England for splendid keeping equality is due in large measure to the cool weather at the harvest time which causes a large proportion of the fruit to reach the market in good condition, while the general impression that the apples of the warmer fruit belts like Delaware, and Maryland, and Southern Illinois and Missouri are lacking in keeping power, is due largely to the frequent injury to the keeping quality by warm weather at the harvest time, rather than to an inherently weak keeping quality in the fruit itself. When stored as soon as the fruit is picked, many of the best varieties of the South equal the varieties of the North in keeping quality.

At the present time a large proportion of the apple crop is stored in the big cities. In 1902, 43 per cent. of the entire storage of the country being held in Chicago, New York, Boston, Philadelphia, Rochester, St. Louis and Indianapolis.

The local warehouse is ideal for quick storage, and for the grower who is competent to handle his own crop. Capital has developed the warehouse business in the large cities, as it is more convenient to distribute the fruit from them, and more economical to maintain a plant where a general storage business can be operated. But as the importance of quick storage at the harvest time is more generally appreciated, it will probably lead to a greater development and concentration of local storage houses and to the greater use and improvement of the refrigerator car service.

Cold storage is already exerting an important influence on the development of our export trade by providing a longer season for distributing the fruit. From 1893 to 1896 inclusive, an average of 78,907 barrels per year were exported between the first of January and the last of May, or 17.9 per cent. of the exports of the entire year. From 1897 to 1903, or in that period since the cold storage business has been most largely developed, an average of 240,688 barrels per year or 25.9 per cent. of the exports of the year were forwarded after January first, an increase of eight per cent. per year during that period. From 1893 to 1896, inclusive, 4.5 per cent. of the exports were forwarded after March first. Since 1896, 8.3 per cent. have been exported after March first. The storage of the apples in warehouses in the United States makes it possible to extend the export trade late in the season, and as the fruit can be forwarded safely in common storage in well ventilated boats during the spring or in refrigerator compartments as late as the middle of May, the storage business is destined to exert an increasingly important influence on the future development of the export trade.



WRAPPED KIEFFER PEARS REMOVED FROM COLD STORAGE (36° AND 32° F.) ON MARCH 3, 1902.

Fruit in both boxes picked Oct. 21, 1901, and stored on the following day, that on the right at a temperature of 32° and that on the left at 36° F. [Powell, Bulletin 40, Bureau of Plant Industry, Dept. of Agr.]

Cold storage is tending to raise the standard of fruit growing. It is emphasizing more than any other factor in the commercial fruit trade the importance of physically perfect, well developed fruit. It is directing attention especially to the fact that wormy or diseased fruit, or fruit that is bruised has poor keeping quality; that poorly colored or immature fruit is generally inferior in keeping quality and in selling value, and that poorly colored apples are especially susceptible to scald.

The methods of handling fruit in the orchard and in transit are destined to improvement by cold storage. Careful picking, packing and grading are emphasized over and over again. The investigations in fruit storage are showing that the most perishable fruits, like Bartlett pears, need packing in small packages from which the heat can be radiated quickly on entering the warehouse, that if fruit is delayed in transit or in the orchard under conditions that cause it to ripen, the warehouseman is not responsible for subsequent losses, but that the responsibility lies with the methods of handling the fruit between the orchard and the warehouse.

Cold storage is increasing the commercial value of the finest dessert apples by lengthening their season of usefulness. If the fruit is picked when properly mature, each apple wrapped in paper and stored soon after picking in a low temperature in rooms that are thoroughly sweet, the Grimes and Mother retain their highest qualities till March, while the spicy Jonathan, Northern Spy and Esopus Spitzenburg are in their greatest perfection till April or even May. With the increasing desire for fruit as a staple food, the time was even more propitious for the grower of varieties of the highest quality. There is an undersupply of Northern Spy, Rhode Island Greening, Esopus Spitzenburg and Jonathan in the markets of the country, and the trade is forced to use the cheaper grades of apples because the supply ot them is more uniform. The Ben Davis, Gano, York Imperial and Baldwin apples and the Elberta peach should be looked upon as the sturdy pioneers that are opening the markets of the world and blazing the way for better kinds. They are inaugurating fruit diets in countless homes that know no better kinds, and by creating a desire for fruit present the golden opportunity for the Grimes, the Spitzenburg and the Spy, just as the satisfaction with the homespun coat and the rag carpet give way to a desire for a dress suit and a turkish rug as civilization advances.

The cold storage business is a necessary adjunct to the rapidly developing commercial orcharding of the country. It is the reservoir in which the temporary oversupply of fruit is placed, and from which it may be uniformly distributed throughout the year. From the earliest times it has been recognized that some provision must be made to store up the temporary surplus and distribute it in time of greater need if an industry is to grow into permanency and stability, and if violent fluctuations in supply and demand are be avoided. The danger of so-called overproduction is greatest in an industry when no provision is made to equalize the distribution of the products throughout the year. There can be no general overproduction when the majority of the people of the world are still under supplied and an industry becomes safe and attractive when man masters the art of handling the temporary oversupply and of converting it into a steady uniform supply to an increasing number of people. (Applause.)

NOMENCLATURE

The President: Now we shall have the report of the Committee who has been engaged four years in formulating a Code of Rules for the more perfect naming of fruits—The committee on nomenclature. It is a very important report, and I know every pomologist will be interested in it—Secretary Taylor.

Secy. Taylor: I will say that this is the report of the committee appointed at the Philadelphia meeting in 1899.

REPORT OF SPECIAL COMMITTEE ON REVISION OF RULES OF NOMENCLATURE.

In undertaking to revise the "Rules of Nomenclature" as adopted by the Society at the St. Louis Meeting in 1867, and modified at the Philadelphia meeting in 1883, your Committee has been guided by the following considerations:

1st. That the primary reason for concerted action is to make possible an accurate, distinctive and simple system of nomenclature for fruits. This is essential to the scientific investigator and is of distinct economic importance to the grower and the consumer.

2nd. That in fruit varieties as in other organic products that have been profoundly modified through the influence of man, the individual who produces, discovers or distributes, an improved variety, acquires the first right of ownership in it and the right to name it; subject only to the larger rights of the horticultural public.

3rd. That in the light of past experience, the unrestricted naming of fruit varieties by originators, discoverers and introducers has resulted in complexity, confusion and frequent duplication of fruit names, alike destructive to scientific accuracy in pomology and detrimental to the best interests of both the amateur and the commercial fruit grower.

4th. That the greatest good for the greatest number makes it advisable that certain generally accepted principles of pomological nomenclature be embodied in a code which those who are desirous of promoting the advancement of scientific pomology may adopt as a guide in determining doubtful points.

5th. That such code should provide for a rigid adherence to recognized principles in so far as the naming of new fruits is concerned and that it should at the same time be capable of application to the improvement of existing fruit names to the greatest extent possible without destructive disarrangement of pomological literature and commercial lists.

6th. That the construction of such a code, which deals with common names in general use, involves the acceptance of certain inconsistencies and exceptions not frequently encountered in purely scientific literature, which, in order to avoid uncertainty, should be clearly pointed out and recognized. Among these may be mentioned the present necessity of limiting its application to pomological literature published in the English language and in certain cases to that published in America; the occasional recognition of the same name for two or more old varieties that are firmly imbedded in the literature of pomology, but one or all of which are of little present importance; the rather frequent disregard of the rule of priority of publication, both where the newer varietal names are now too firmly established to permit of change and where through either unintentional or deliberate error the rights of individuals or communities are disregarded.

After due consideration of the above points it appeared advisable to your Committee to substitute for the existing rules a clearly stated code that will embody the principles in suitable language. The resulting code is appended and made a part of this report. It will be observed that in general outline it follows somewhat closely the "Lazy Club code"[1] of 1898, which has been widely discussed before this and similar bodies during recent years. Unlike the "Lazy Club" code, however, it recognizes the property rights of originators, discoverers and introducers in plant names, subject only to the broader rights of the interested public. It goes further than the Lazy Club code in restricting varietal names to single words with certain clearly defined exceptions to cover names already firmly fixed in literature. Effort has been made to make the code self interpreting by embodying certain important applications and exceptions in the form of subordinate clauses and to provide for the improvement of existing nomenclature through its application along conservative lines without destroying the usefulness of existing literature or injuriously disturbing commercial lists.

Respectfully submitted,

Wm. A. Taylor,
L. H. Bailey,
F. A. Waugh,
Wm. C. Barry,
T. V. Munson.
Committee.

CODE OF POMOLOGICAL NOMENCLATURE.

Adopted at Boston, Sept. 10, 1903.

Priority.

Rule 1. No two varieties of the same kind of fruit shall bear the same name. The name first published for a variety shall be the accepted and recognized name, except in cases where it has been applied in violation of this code.

A.—The term "kind" as herein used shall be understood to apply to those general classes of fruits that are grouped together in common usage without regard to their exact botanical relationship; as, apple, cherry, grape, peach, plum, raspberry, etc.

B.—The paramount right of the originator, discoverer, or introducer of a new variety to name it, within the limitations of this code, is recognized and emphasized.

C.—Where a variety name through long usage has become thoroughly established in American pomological literature for two or more varieties, it should not be displaced nor radically modified for either sort, except in cases where a well-known synonym can be advanced to the position of leading name. The several varieties bearing identical names should be distinguished by adding the name of the author who first described each sort, or by adding some other suitable distinguishing term that will insure their identity in catalogues or discussions.

D.—Existing American names of varieties which conflict with earlier published foreign names of the same, or other varieties, but which have become thoroughly established through long usage shall not be displaced.

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[1] Lazy Club: the Horticultural Club of Cornell University.

FORM OF NAMES.

RULE 2. The name of a variety of fruit shall consist of a single word.

A.—No variety shall be named unless distinctly superior to existing varieties in some important characteristic nor until it has been determined to perpetuate it by bud propagation.

B —In selecting names for varieties the following points should be emphasized : distinctiveness, simplicity, ease of pronunciation and spelling, indication of origin or parentage.

C.—The spelling and pronunciation of a varietal name derived from a personal or geographical name should be governed by the rules that control the spelling and pronunciation of the name from which it was derived.

D.—A variety imported from a foreign country should retain its foreign name subject only to such modification as is necessary to conform it to this code or to render it intelligible in English.

E.—The name of a person should not be applied to a variety during his life without his expressed consent. The name of a deceased horticulturist should not be so applied except through formal action by some competent horticultural body, preferably that with which he was most closely connected.

F.—The use of such general terms as seedling, hybrid, pippin, pearmain, beurre, rare-ripe, damson, etc., is not admissible.

G.—The use of a possessive noun as a name is not admissible.

H.—The use of a number either singly or attached to a word should be considered only as temporary expedient while the variety is undergoing preliminary test.

I.—In applying the various provisions of this rule to an existing varietal name that has through long usage become firmly imbedded in American pomological literature no change shall be made which will involve loss of identity.

RULE 3. In the full and formal citation of a variety name, the name of the author who first published it shall also be given.

PUBLICATION.

RULE 4.—Publication consists (1) in the distribution of a printed description of the variety named, giving the distinguishing characters of fruit, tree, etc., or (2) in the publication of a new name for a variety that is properly described elsewhere ; such publication to be made in any book, bulletin, report, trade catalogue or periodical, providing the issue bears the date of its publication and is generally distributed among nurserymen, fruit growers, and horticulturists ; or (3) in certain cases the general recognition of a name for a propagated variety in a community for a number of years shall constitute publication of that name.

A.—In determining the name of a variety to which two or more names have been given in the same publication, that which stands first shall have precedence.

REVISION.

RULE 5. No properly published variety name shall be changed for any reason except conflict with this code, nor shall another variety be substituted for that originally described thereunder.

Mr. Taylor moved the adoption of the Report.

DISCUSSION SUCCEEDING A MOTION TO ADOPT THE REPORT.

Mr. Ragan : I have been somewhat familiar with the work that the committee has been doing, although not a member of that committee, and I must say that I fully approve of the proposed substitution of the new rules for those now standing. I see no reason why they may not be safely adopted by this Society.

Mr. Garfield : I could not follow very closely all of this, but it seems to me that a committee of unquestioned intelligence and probity like this one, having wrestled with the subject for four years, ought to make the best kind of a report and one which we can safely adopt. I was very familiar with the course of evolution that led up to the appointment of this committee—that is Mr. Lyon's work, along this line—and it seems to me that we are honoring Mr. Lyon in following this work, which he started so well, in such a logical way as this committee has brought it out in this report.

Prof. Waugh : There is one thing I would like to call attention to. While it is true, as has been stated, that the committee has spent four years in preparing this report, it is not true that this report is four years old. Some of it was written up last night. There was a great diversity of opinion in regard to some details, but the committee is quite unanimous in favoring this set of rules. It is almost impossible that the rules should all have been expressed in the most happy and accurate terms, and therefore, while I favor the adoption of the report, I should hope that it is with the understanding that the report should be open still to minor corrections.[1] If it is necessary, Mr. President, I should like to make it as an amendment to this motion.

The President : Unless there is some objection the Chair sees no reason why that committee should not be continued by common assent. Unless there is some objection it will be taken in that way as a matter of common consent. Are there further remarks upon the question now before you?

Prof. Van Deman : I would like to say that though I am not a member of that committee I had an opportunity to go over these rules, and I approve of the whole thing. I think we cannot do better than adopt the report just as it stands.

Secretary Taylor : There is one point which should be mentioned. The first rules of 1867 were the rules of our beloved former member Mr. Patrick Barry ; the rules of 1883, as Mr. Garfield has said, were revised by Mr. Lyon. An effort has been made to incorporate into the newest the essential features of both of those sets of rules, and in this way to bring the code up to date. The provision for editing[1] is entirely agreeable to the Chairman of the Committee, and was considered advisable at our final meeting last evening.

Mr. Strong : I wish to make a single point, not to object to the adoption of the code, but I think that it is unfortunate that the public is obliged to submit without a word to the naming of fruits by introducers who may apply objectionable names. I recognize the right of the introducer to express his opinion, but it is somewhat a question as to whether he has a right to foist upon the public for all time unfortunate names. For example I have felt that the name of a leading orange, the popular name now given to the naval orange, is unfortunate, and ought not to have been given in the first place, but it is now used so universally that I suppose no change can be made. I don't know as there is any remedy, or any way of preventing an introducer from foisting a name upon the public, which we should be glad to change. But public sentiment should be against it.

A Member : I think Mr. Strong is right, no person has a right to impose upon the public something that is entirely inappropriate. I think those rules are so constructed that this matter is held in the hands of this Society, as the supreme authority in the country upon that subject. Of course there are some little modifications which are always necessary. I think there is ample opportunity there to apply the rules very generously and sometimes very strictly as the committee may think best.

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[1] The code has been carefully edited by the oommittee and now appears exactly as the members would have it.

The President: Gentlemen: Are you ready to vote, if so, you who favor the adoption of this vote will say aye.

The vote is carried unanimously and the code is adopted.

The President: The Chair wishes to make an announcement. I see that our programme provides that on Friday morning there shall be an election of officers. The manner in which that is brought about is that those in attendance from each state or territory and the District of Columbia, and from the provinces of Canada choose one of their number to represent the state or territory or the district or the province, as the case may be. These delegates then will come together in meeting decide upon the candidates and report your officers for the next year.

Adjourned until 8 o'clock P. M.

THURSDAY EVENING SESSION.

Sept. 10, 1903, 8 o'clock P. M.

Meeting called to order by President Watrous.

The President: Before taking up the programme of the evening we have some preliminary work to get through with in the nature of reports of committees. Are there any committees ready to report?

Mr. Garfield: I occupied the position of chairman of the executive committee, with Mr. Taber, Mr. Barry, Mr. Trelease and Mr. Strong as my associates. We have never had a meeting, and the President here did not allow us to meet at any time except outside of this meeting, and so we were handicapped in a sense. We have a Secretary in whom we have a great deal of confidence, and when anything that he doesn't know comes up he consults Mr. Ragan and Mr. Brackett; and this report on the organization of an *ad interim* committee, (although I have never seen it before,) I endorse; and the other members here (although they have never seen it) endorse it also. So it is universally endorsed.

The report, after being read was adopted, and is as follows:

REPORT OF EXECUTIVE COMMITTEE ON INAUGURATION OF THE PLAN FOR AD INTERIM EXAMINATION OF NEW FRUITS AUTHORIZED AT BUFFALO MEETING.

As the result of the motion passed at the Buffalo meeting in 1901, the question of the practicability of providing for *ad interim* examination of new fruits was taken up by the Executive Committee through correspondence. There being general agreement among the committee members and others who were consulted that the end sought is desirable, the formulation of a plan for its accomplishment was undertaken early in 1901. After a free interchange of views had been had it was decided that an *ad interim* Committee of Awards consisting of fifty members should be constituted whose duty shall be to examine and pass upon the merit of such seedlings as are entered and furnished by originators for examination, when the fruit is in proper condition. This Committee is headed by a General Chairman and is divided into seven Sub-Committees each consisting of a Chairman and six members, and having jurisdiction over a certain class of fruits. The President and Secretary of the Society and the Pomologist of the

United States Department of Agriculture are designated as *ex-officio* members of the General Committee.

Effort was made to afford originators everywhere within the field of the Society the opportunity to submit their promising seedlings to competent experts in this way for careful examination with a view to determining their relative merit. At the same time certain safeguards were provided to guard against the efforts of possible undue enthusiasm of originators and insure conservative and well considered action on the part of the Committee.

The Committee was constituted by the appointment of its members by the President with the approval of the Executive Committee and an announcement of the plan with the names and addresses of the General Chairman and the full membership of the Committee, was issued in booklet form April 6, 1903. This was mailed to all members of the Society and to a large number of fruit originators and introducers.

This plan and the Committee Membership as finally amended were as follows:

"THE WILDER MEDAL."

A Plan for *ad interim* Examination of New Fruits.

At the Richmond meeting of the American Pomological Society in 1871, provision was made for the procuring of a die for a medal of the Society to be offered in lieu of money premiums for exhibits at its meetings. At the Boston meeting for 1873, this medal was officially designated "The Wilder Medal," in honor of the beloved President of the Society, the late Hon. Marshall P. Wilder. Since that date it has been awarded biennially at the meetings of the Society to objects of special merit in connection with pomology. Under the terms of a bequest in the will of President Wilder its continued issue is assured.

The biennial awards of the medal have hitherto been chiefly confined to meritorious exhibits of fruits at the regular meetings of the Society. The stimulus to endeavor on the part of fruit growers and collectors has been marked, and much benefit to pomology throughout North America has resulted from the interest thus aroused. It has long been recognized, however, that many originators, discoverers, and introducers of fruit varieties have been excluded from competing for the medal by the fact that their productions did not mature at a time when they could be exhibited at the Society meetings.

To remedy this condition, the Executive Committee was authorized at the Buffalo meeting to consider the matter, and if found practicable to devise a plan for *ad interim* examinations of new fruits, so that all fruit growers may have opportunity to participate in the benefits derived from the medal.

After due deliberation the Executive Committee has agreed upon the plan announced herein, which is offered to the fruit-growing public for their consideration.

Open to all Fruit Growers in North America.

All originators, discoverers, or introducers of new fruits, that are regarded as of distinct and superior merit for any region or purpose, are invited to submit specimens of their productions for examination. This offer is not restricted to members of this or other societies, but is open to all fruit growers in North America. To insure uniformity of treatment. The following simple rules have been formulated:

RULES GOVERNING AD INTERIM AWARDS.

Formation of *ad interim* Committee of Awards.

I. An *ad interim* Committee of Awards shall be appointed by the President, which shall consist of a General Chairman and seven sub-committees, each composed of a chairman and six members.

These sub-committees shall be designated respectively as follows: 'Pome-Fruits,' 'Stone-Fruits,' 'Grapes,' 'Miscellaneous and Small-Fruits,' 'Citrous Fruits,' 'Tropical and Sub-Tropical Fruits,' 'Nuts.' The President and Secretary of the Society, and the Pomologist of the United States Department of Agriculture shall be *ex-officio* members of the *ad interim* committee.

Method of Submitting Specimens for Examination.

II. Originators, discoverers, or introducers of new fruits who desire to enter them in competition for the Wilder medal shall first make application to the Secretary of the Society, stating the kind of fruit and the proposed name of the variety that is to be submitted. The Secretary shall thereupon furnish the necessary entry blanks and the addresses of the chairman and members of the sub-committee to which the specimens shall be submitted.

III. Typical specimens of each variety to be considered by the committee must be forwarded prepaid to the chairman and at least three members of the proper sub-committee, and to the Pomologist of the United States Department of Agriculture, for examination. Each lot of specimens must be accompanied by normal foliage of the variety and by a statement of its origin or history, the extent to which it has been disseminated, and its habit of growth, hardiness, general vigor and productiveness. When practicable an unmounted photograph of the tree, plant or vine should be furnished All questions relating to the nomenclature of varieties shall be governed by the established rules of the Society on that subject.

DUTIES OF SUB-COMMITTEES.

IV. Upon receipt of specimens of a variety for *ad interim* examination each sub-committee member receiving such specimens shall make careful examination of the same and record his opinion of the relative merits of the variety upon a blank form in duplicate, to be furnished him by the Secretary. One copy of this should be mailed at once to the chairman of the sub-committee, and the other to the Secretary of the Society for record. All reports of this character *shall be considered confidential*, until after the next meeting of the Society.

V. Chairmen of sub-committees shall have authority to consult experts not on their sub-committees when necessary. They shall summarize the reports upon the fruits examined by their respective sub-committees and forward the summaries to the General Chairman of the *ad interim* Committee of Awards to reach him at least one week in advance of the Society meeting. The General Chairman shall call his committee together and present these reports to the committee for action as early in each session as practicable.

METHOD OF MAKING AWARDS.

VI. The committee shall report its findings to the Society not later than the second day of the session, and they shall be subject to confirmation by the Society in open session, but no award shall be made by the Society to any variety that has not received the approval of the proper sub-committee. Such awards, when made, shall be equal in rank to those made by the regular Committee of Awards upon specimens exhibited at meetings of the Society.

IMPORTANT.

Intending competitors should notify the Secretary at least ten days in advance of the ripening time of their fruits if possible, in order that the necessary blanks may be sent in ample time for use when the fruit is in condition for examination.

Address all correspondence relating to such specimens to the Secretary,

JOHN CRAIG,
Ithaca, N. Y.

Prepared and published by Wm. A. Taylor.
Washington, D. C., April 6, 1903.

In accordance with the Rules adopted by the Executive Committee the following Committee is announced for the period ending with the Boston Meeting.

AD INTERIM COMMITTEE OF AWARDS.

General Chairman.

Dr. F. M. Hexamer, 52 Lafayette Place, New York, N. Y.

Sub-Committee on Pome Fruits.

Chairman, C. W. Garfield, Grand Rapids, Mich.
R. S. Northrup, Ithaca, N. Y.
W. T. Macoun, Ottawa, Canada.
Wm. C. Strong, Waban, Mass.
L. A. Goodman, Kansas City, Mo.
E. F. Babcock, Waitsburg, Washington.
Benjamin Buckman, Farmingdale, Ill.

Sub-Committee on Grapes.

Chairman, S. A. Beach, Geneva, N. Y.
Raphael Bush, Bushberg, Mo.
Geo. C. Husmann, Washington, D. C.
Silas Wilson, Atlantic, Ia.
T. V. Munson, Denison, Texas.
H. Von Luttichau, Earleton, Fla.
H. N. Starnes, Experiment, Ga.

Sub-Committee on Miscellaneous and Small Fruits.

Chairman, W. J. Green, Wooster, Ohio.
F. W. Card, Kingston, R. I.
M. Crawford, Cuyahoga Falls, Ohio.
L. R. Taft, Agricultural College, Mich.
A. G. Gulley, Storrs, Conn.
L. Woolverton, Grimsby, Ontario.
E. L. Smith, Hood River, Oregon.

Sub-Committee on Citrous Fruits.

Chairman, G. L. Taber, Glen St. Mary, Fla.
W. H. Backus, Riverside, Cal.
H. Harold Hume, Lake City, Fla.
N. W. Blanchard, Santa Paula, Cal.
Chas. H. Shinn, Nules, Cal.
E. L. Koethen, Riverside, Cal.
W. S. Hart, Hawks Park, Fla.

Sub-Committee on Tropical and Sub-Tropical Fruits.

Chairman, E. J. Wickson, Berkeley, Cal.
A. A. Boggs, Cocoanut Grove, Fla.
Ellwood Cooper, Santa Barbara, Cal.
P. H. Rolfs, Miami, Fla.
G. Onderdonk, Nursery, Texas.
A. J. McClatchie, Phoenix, Ariz.
F. H. Burnette, Baton Rouge, La.

SUB-COMMITTEE ON NUTS.

Chairman, H. E. Van Deman, Washington, D. C.
B. M. Young, Morgan City, La.
J. W. Killen, Felton, Del.
N. S. Platt, Cheshire, Conn.
Henry E. Dosch, Hillsdale, Oregon.
J. Russel Smith, Lincoln, Va.
Felix Gillet, Nevada City, Cal.

It will be observed that such points as the length of time during which a variety should be under observation by the Committee, the decision as to what shall constitute a new variety, and other important points are left to the discretion of the Committee. This was considered advisable on account of the varying requirements for the several fruits and is believed to be preferable to a hard and fast schedule specified in the Rules.

While sufficient time has not elapsed to make possible accurate conclusions regarding the extent to which originators will take advantage of the provisions of this plan and thus receive recognition for their productions in accordance with their merit, it is believed that when the plan is generally known and understood it will be very generally approved and utilized. More than thirty varieties have been entered for examination during the present season, and while some of these owing to the vicissitudes of the season have not reached the Committees in the form of specimens, it is believed that enough has been accomplished to demonstrate the usefulness and value of the plan to originators whose products mature at other seasons than those in which the regular fruit exhibits of the Society are usually held. It is therefore recommended that the *ad interim* Committee of Awards be recognized as a standing committee of the Society through the adoption of a suitable by-law at the present meeting.

SUGGESTED BY-LAW TO PROVIDE FOR A STANDING AD INTERIM COMMITTEE OF AWARDS.

To be numbered By-law 12. The present By-laws 12, 13, and 14 to be renumbered.

> By-law 12. A Standing Committee on *ad interim* Examination of NEW FRUITS, consisting of a General Chairman and seven subcommittees each of which shall consist of a Chairman and six members, shall be appointed by the President after each meeting. It shall be the duty of this Committee to examine and report upon such new fruits as shall be entered and furnished by originators, discoverers, or introducers at times when the Society is not in session under such rules as may be formulated and published from time to time by the Executive Committee.

Mr. Strong: Mr. President, before you turn over this meeting, I want to say that since I came into this room I was asked the question whether the Massachusetts Horticultural Society allowed fruit to be placed upon its table which was supposed to be of little value, or of no value at all and yet was so attractive that it commanded a ready sale on exhibition. I wish to say that the Massachusetts Horticultural Society accepts no responsibility whatever for anything that takes place in this building under your possession. The building is under the control of the Pomological Society, and any errors in regard to fruit that is on exhibition here rest upon the shoulders of the Pomological Society.

Mr. President: I am very glad that Mr. Strong has made this statement, because as we are the guests here of the Massachusetts Horticultural Society it would indeed be very unfortunate if we should cause any annoyance to them, and if anything is taking place that appears to do so I am very glad that the onus is placed where it belongs.

Mr. Hale: In that connection, there is a very beautiful exhibit of the strawberry-raspberry. It is under the name of the India raspberry, but it is the same old "strawberry-raspberry." There are strangers who have come to this meeting of the American Pomological Society and they are observing this beautiful but worthless fruit on exhibition and they may be imposed upon by it. The plants are on sale at $3.00 per dozen,—this new-old India-raspberry. I think it is likely to impose upon a good many respectable but uninformed people.

The President: Let the chair suggest that, with the consent of the Society, the exhibit be removed.

Mr. Van Deman: I was not aware of this exhibit until this evening, and I at once stated that it was a worthless thing. I did not know that it was being sold, and I offer this resolution: that the party who has this fruit on exhibition be requested to desist from any further attempt at taking orders. That is certainly all that we can propose.

Member: I certainly think if it remained on exhibition in the hall the Pomological Society does not wish to have it labeled India-raspberry.

Mr. Van Deman: I accept the amendment,—that the plant be properly named.

The President: You that favor this resolution, which orders that the owner of the exhibit of this so-called India raspberry should be requested to desist from selling it and that it be properly labeled, will say aye.

Member: I beg to ask if this exhibit has been placed there by a member of the Pomological or the Horticultural Society or an outside party.

The President: I think the exhibit is not by a member of the Society so far as I know. There is no formal entry whatever. It is there at the pleasure of this Society and if it is misrepresented it is entirely within the power of the Society to remove it.

Motion carried.

The President: The chair will ask Mr. Van Deman to carry out the letter of this resolution.

SYMPOSIUM OF PROGRESS OF POMOLOGY IN AMERICA

The President: Now I have great pleasure in introducing to you the chairman of the evening, Prof. John Craig.

Prof. Craig: Mr. President, Ladies and Gentlemen: I wish to congratulate the chairman of the Executive Committee on originating the idea of having a retrospective evening here in Boston. We are this evening to have a glance at the horticulture of the past quarter century ago or longer, and incidentally a glimpse at the status of horticulture as it exists to-day in the parts of the country represented by the various speakers. This programme has been somewhat hastily arranged and we are under obligations to the persons who appear for preparing papers at short notice for our entertainment. I am sure you will be delighted to welcome as your first speaker this evening, Dr. F. M. Hexamer, of New York, one of the oldest and best known members of the Society, who will pave the way for those who are to follow.

I. POMOLOGICAL PROGRESS IN AMERICA.

A GENERAL SURVEY.

By F. M. Hexamer, New York.

The most substantial progress and advancement of pomological science in America had its beginning with the organization of the American Pomological Society, over half a century ago. While apples, pears, peaches and a few other fruits were grown here before that period, the most powerful stimulus toward a systematic and scientific pomology was exerted by this grand old Society. In no other branch of horticulture has there been as marked and rapid progress during the latter half of the last century as in fruit culture.

Not many decades ago apples were chiefly grown for cider; now they are an indispensable article of food. The better fruits that were formerly considered as luxuries only, for the table of the wealthy, have their regular place among the ordinary supplies of every man's fare. Not more than half a century since, the possibility of exporting American fruits to Europe was not even dreamed of, much less the finding of a market for them.

The first American fruits experimented with were Newton Pippins, sent to England, in bushel boxes, by Robert Pell, near Newburgh on the Hudson; and they were so well liked that they brought from $8 to $10 per box. From this small beginning has gradually developed the immense export trade of the present day, and which is constantly increasing not only in the English markets, but also in Germany, France and other continental countries.

No more obvious evidence of the position of American fruits in the markets of the world could be presented than their record at the Paris World's Fair in 1900, where the American exhibit of apples and citrous fruits were the largest ones there throughout the exposition, attracting much attention from the general public; as well as favorable consideration from the jury. The United States section has had at all times, during the display, more than double the quantity of these fruits on exhibition than all other nations together, France included, and has received more than twice as many awards on them as all other nations.

That the United States is destined to become, if it is not already, the leading fruit country of the world, can no longer be doubted. The chief causes combining towards this end are the country's congenial climate to fruits; its extensive and varied areas available for their growth; the uniformity of its political and social conditions, allowing of free interchange and comparison of ideals and methods; and, last, but not least, that the American farmer has more help from teachers, experimenters and the national as well as state governments, than any other farmers have. As a consequence, knowledge of all theories and practices, which make for better fruit growing, are being popularized.

Fruit growing for market has increased enormously in extent, and has greatly advanced in its methods during the last 20 or 30 years. At the present time it employs vast sums of capital, furnishes a livelihood to armies of men and women, and yields, on the whole, large profits. It is unquestionably true that America leads the world in the production of fruit in large quantities and in the perfection with which this fruit is distributed to distant points. The fruit business in general in the United States has increased in much greater proportion than other agricultural industries; and while the production of fruit in the past 50 years has increased 2,000 per cent., the total population in the country during the same period increased only 270 per cent.

The importance of proper refrigeration during the entire process of marketing and transportation has only recently been fully realized and brought to practical and successful application. It has been learned that even our best fall and winter fruits need a cool temperature, if we expect them to reach the consumers in first-class condition. Quick transportation, proper handling and ceaseless watchfulness at every step from picking to the hands of the consumers are indispensable and are to be secured only by intelligent organization and co-operation. Many valuable points on the subject of cold storage were learned at the Pan-American exposition at Buffalo.

Half a century ago the cultivation of small fruits, as a distinct feature in fruit culture, had no existence. While strawberries, raspberries, currants and perhaps a few other berries were found in some gardens, the principal family supply of these fruits was drawn from the fields and woods. The regular marketing of strawberries in New York City had its beginning with a few wagon loads of little Scotch Runners from Hackensack, N. J., brought across the Hudson River in sailing sloops, as often as twice a week, wind and tide permitting. These were peddled through the streets in small, handled splint baskets, strung on long poles, carried by strong negroes, across their shoulders. Then three weeks were about the extent of the strawberry season, while now it begins with the Florida crop in January and closes with that of Canada at the end of July. Similar conditions prevailed in regard to other small fruits.

Not a few men and women now living remember the time when there were no Hovey or Wilson strawberries, nor any other kinds of improved small fruits, nor grapes offered in our markets. Small fruit culture of a definitely organized and systematized business is of distinctively American origin; and in the development of small fruits no material progress was made until the improvement of the native species was begun. All these fruits went through an initial stage of depending upon foreign varieties. Following this, an area of improvement set in, during which, by careful breeding of the native species, and infusion into them of the improved European blood, by hybridization, strains better adapted to American conditions were obtained. This change from an almost total reliance upon introduced varieties to a marked supremacy of sorts originated here has taken place almost wholly since the organization of the American Pomological

Society. The entire list of strawberries recommended in the Society's first fruit catalogue consisted of large Early Scarlet Hovey and Boston Pine ; in blackberries of New Rochelle ; in grapes of Isabella and Catawba, with Diana for trial ; Black Caps had no recognition among cultivated fruits. A glance at our present catalogue will readily demonstrate the pomological progress in this direction.

An entirely new factor in striving to improve our fruits is plant-breeding. It has been ascertained that the best results are usually obtained quickest by working with variable forms, and that it is necessary to establish in the mind an ideal to work toward, and that crossing is only a means to an end, and should be supplemented by vigorous and persistent selection. The majority of the native varieties of fruits introduced in the earlier part of the last century were merely chance seedlings which grew uncared for until their good qualities were discovered when they were brought into cultivation.

Of far greater importance, however, has been the introduction of varieties which have been produced by careful methods of selection, carried through, from one, to many generations. Hybridization has already had a very marked effect in the development of new and valuable grapes, pears, etc., etc., and more recently the results already obtained in hybridizing the sweet orange with the trifoliate species have been so encouraged that it may be confidently expected that in the near future fruits obtained from these hybrids will be acceptable in quality and sufficiently hardy to bring the latitude of orange culture much farther northward.

The radical changes in conditions during the last decades of the nineteenth century along agricultural and commercial lines have been followed by the general distribution of many insect pests of a serious character. In commercial transactions the dangers have been so great along certain lines that many state laws have been enacted to prohibit the distribution of such insects as the San José scale and others of a dangerous nature. Ability to successfully combat noxious insects is a problem of the most vital importance to farmers, fruit growers, nurserymen, gardeners, florists, millers, grain dealers, transportation companies, merchants, grocers, housekeepers and others. This is especially true of the fruit, nursery and grain industries. The use of hydrocyanic acid gas and carbon bisulphide, two very powerful insecticides, have largely solved these problems.

In no one of the appliances of science pertaining to fruit growing has the American so clearly the advantage of the European as in the knowledge of insect and fungous pests and of the means of dispatching them. The superiority of the American fruit as a general market product is due in a considerable degree to fumigating and spraying.

During all these years of progress the American Pomological Society has vigorously and effectively aided in the marvelous development of American pomology, under the leadership of Wilder, Berckmans and Watrous. While only four of the original founders are living to-day, George Ellwanger, S. B. Parsons, Peter B. Mead and Henry Wood, a younger generation has taken up the great work so successfully carried on by those who have gone before them.

And now, with the twentieth century, what a glorious vista presents itself to the pomologist of the present day. Thousands of new fields, untrodden and unknown, are spread out before him in our new Asiatic and tropical possessions.

Who can doubt that many of the tropical fruits found in Porto Rico, Hawaii and the Philippines are not just as amenable to improvement as our own wild fruits have been. To the intelligent and progressive pomologist the possibilities for improvement in this direction offer a vast and enticing field for experiment and investigation. (Applause.)

Prof. Craig: When Dr. Hexamer was invited to present this paper, or a paper of this kind, at this meeting he expressed the fear that his health would not permit him to be here, but he said that if anything could bring him it was his intense interest in a meeting of this character. We are to be congratulated, gentlemen, that he has been with us, and that we shall have in our records this valuable paper. It will prove an inspiration for the young men and a valuable addition to our historical records.

We shall now hear from New England, and I have the pleasure of calling upon First Vice-President William C. Strong of Waban, Mass.

2. A SKETCH OF HORTICULTURAL PROGRESS IN NEW ENGLAND DURING THE PAST HALF CENTURY.

William C. Strong, Waban, Mass.

I share with you in surprise that this subject should have been assigned to one of my advanced years. I have a vivid remembrance of the good *old* days when we had the markets all to ourselves. It should require the enthusiasm of young America to be cock-sure of progress and to foresee the dawn of the millenium in Horticulture in New England. Let us take our bearings and consider some facts relating to the subject. For though this Eastern City has been reputed to stand at the fore in education and in culture, it by no means follows that in horticulture it had almost reached the limit 50 years ago, or even yet has attained the goal of perfection. By comparison we shall best judge. Unlike most sections of our vast country, New England has had a relatively long experience. It is of interest to note the wise forethought of the parent Massachusetts Company in London in voting, as early as in 1629 to send seeds of all sorts of fruit, as peaches, plums, filberts, cherries, apples, pears, quinces, etc. Josselyn records that these seeds were sent, sprung up and prospered. This was but a decade after the landing of the pilgrims. In the year 1630 the family tradition is that Gov. Endicott imported the first pear tree, which he planted on his Salem farm, which he called Orchard. This tree was standing until quite recently. Of the rapid progress in this art we note the fact that in 1648 Gov. Endicott exchanged 500 apple trees for 250 acres of land. Correspondence between Governors Endicott and Winthrop, Winthrop, Jr., and Wm. Trask, the gardener and nurseryman, indicate that a strong interest in fruit trees developed at this early date. So rapidly did this interest increase that in 1721 Chief Justice Dudley, then living in Roxbury, writes that "our apples are without doubt as good as those of England—our peaches excel. Our people of late years have run so much upon orchards that in a village near Boston, they made near 3,000 barrels of cider, and in another town of 200 families they made near 10,000 barrels." "A good apple tree" he says, "will measure from 6 feet to 10 feet in girth. I have seen a fine Pearmain at a foot from the ground measure 10 feet and four inches around. This tree in one year has borne 38 bushels of as fine Pearmains as I ever saw in England." One of my neighbors, "continues Judge Dudley," has a Bergamot pear tree that was brought from England in a box about the year 1643, that now measures 6 feet in girth, and has borne 22 bushels of pears in one year. This was in 1721, 180 years ago. Since that time it is quite clear that we have made marked progress.

Let us make a leap of somewhat more than a hundred years and come down within our own knowledge. Fifty years ago the Massachusetts Horticultural Society was in full swing; it had its weekly exhibitions and included in its ranks a notable list of contributors. The annual exhibit of 1848 required the large space of Faneuil Hall to receive its fruits and flowers. Pears took the first rank, with a collection of 260 varieties from Manning 200 from President Wilder and almost equal numbers from Hovey and others. Apples were in large quantity but were held distinctly subordinate, though their look indicated a consciousness of superior merit. Exotic grapes were a marked feature of the show. Allen of Salem, exhibiting 33 distinct varieties. As illustrating how nearly he covered the year with this fruit, it is recorded that he exhibited the last of his crop from a retarding house on Feb. 2d, and the first of a forced crop on Mar. 23d, an interval of only seven weeks. That the size and the quality of the fruit was equal to any that we now have may be judged by the weight of the Bosc Pear, then new, at 12¼ ounces, and the Grosser Duchesse d'Angouleme at 24 ounces. Anjou and White Doyenne were ten inches in girth. Diel and Flemish were 12 inches. Bunches of grapes weighed four pounds. Two or three years later we have the opinion of that supreme authority, Patrick Barry, whose memory we shall ever cherish, who said: "I have visited a great many exhibitions of the kind, both in this country and in Europe, but this surpasses all I have ever seen. The display of fruits on the tables has hardly been equalled in the world. Such was the condition of fruit culture 50 years ago. Enthusiasm was at its height. Pears in large quantities were cultivated and sold at high prices. Bartletts, Seckel, Anjou, Louise Bonne and the like at $4 to $8 per bushel. Hamburg grapes at 75c to $1 per pound. Muscat of Alexandria at $2 to $3. My own annual crop of exotic grapes was about 4,000 pounds. At this time the Concord grape was introduced and the Delaware a year or two later. Shall we say that this was the high water mark in Fruit Culture in New England? Are we yielding—must we yield to foreign importations? Are we doomed to decadence? In some particulars and to some extent, unquestionably yes.

It is well for us to recognize the radically changed condition of our markets, to clearly discern wherein lies our weakness and where our strength. And chiefly we take note that we are no longer a community by ourselves. The wide, wide world is suddenly opened to us and we are now in daily receipt of fruit from every quarter of the globe. Oranges and other tropical fruits are cheap and abundant throughout the year. Without a struggle, we yield to the Pacific Coast the supply of Muscat grapes, at 15 cts. per pound. Comparatively few exotic grapes of any variety are now cultivated. Even in native grapes the supply from favored sections is so abundant and at such low prices and the fruit is transported so well that we are glad to yield the market, for the public supply, to those who can do it so cheaply. We can do better at something else. In pears we have become wiser than our fathers. We have reduced its rank making it distinctly subordinate to the apple in value and in popular esteem. Its cultivation has fallen off very largely and yet the price of the fruit is low, usually from 75 cts. to $1 per bushel to the producer, for good specimens of choice kinds. This is in marked contrast to former times. Still another and greater contrast is in the narrow limit now given to the number of varieties. The market man has no use for the long list of former days.

Yet we by no means surrender the pear. We have an abiding confidence in the virtue of our climate and soil and in the skill and capacity of our cultivators to produce as fine specimens of the apple and pear as can be seen the world around. It may be that other sections can exceed us in the size of the fruit. But we make quality paramount and in this point we yield to no one. Still we must admit that for commercial purposes the condition of our markets teach us caution. Except for family supply and for the sake of superlative quality, we are more shy than formerly in planting peaches, plums, cherries and grapes. It would be difficult to show that in methods of culture, or in the introduction of new varieties we have made any special progress from the standard attained by our fathers.

And yet there is one respect in which a most important advance has been made. Within recent years investigators have given special attention to the causes and the cures for the various diseases of plants. The results are most encouraging. It is true that mildews, moths, canker-worm, curculio and a host of other insects and fungi have long been known. But with the changes in our climate and the diminishing number of our feathered friends, these evils have been steadily increasing. This has compelled a careful study of the causes and led to methods of coping with the evils. It is not too much to say that practical methods have been discovered which insure almost complete control of most of the diseases of our fruits. This is an immense gain and should inspire the fruit grower with confidence never before felt. The various methods of spraying for the different evils have proved so effectual and so rewarding that a new start is made in the production of perfect fruit. Diseases and difficulties still abound, but the remedies are absolute and the reward is great.

I can think of no more attractive and profitable occupation for a young man of enterprise than the planting of a large tract of upland, of which there are thousands of acres in New England, sufficiently distant from the demand for house-lots and perfectly adapted for the production of apples in the highest perfection. By selecting tested varieties and with judicious management, one may now be more confident than ever before that an orchard thus established will produce a crop of uniform excellence, with few inferior specimens and of a quality scarcely equalled and never excelled. There is a firmness, a crispness, a juiciness belonging to the apples of New England hills, which is lacking in the fruit of other regions. It goes without saying that such perfect fruit will command a ready sale. Not to compare with the fancy and preposterous prices of pears of 50 years ago, but at a rate which will make an adequate return for the investment. The intrinsic value of the apple, the ease and the abundance with which it can be produced at a mininum cost of labor, the length of its season and its length in years and the unlimited demand for the crop all combine to make this by far the most important fruit for New England. Never was there more inducement for a man of energy, with moderate capital, to start in this long but sure enterprise. He will have difficulties with which to contend greater than were known to his fathers, but he will also have helps which are sure and which will give him an immense advantage over an indolent or negligent compet tor.

It is painful to notice indications of indolence and neglect of orchards in sections of our common wealth where every condition for complete success is at hand and enterprise alone is lacking. Who will be first and eager to get renown by setting a worthy object lesson?

May we not hope to see many young men seizing the opportunities to secure cheap hillsides and planting orchards which will prove a pride and profit in after years. Spraying is a priceless boon; it has given new life to apple culture. And it is none the less necessary for the successful culture of every other fruit. With this aid it becomes economy for *householders* to plant *all* the fruits adapted to this climate for home use and for the sake of quality. And there are *local markets* for many of these fruits. By no means would we limit culture to the apple. For all the established kinds there is a brighter prospect than ever before to be able to control diseases and conquer enemies, and thus secure perfect crops.

More careful attention and more labor is involved, but thereby a good degree of certainty of superior products is secured. Sharp competition from imported fruit is to be expected. Of this we take note and govern ourselves accordingly. In some instances we yield the market. Discretion is the better part of valor. Do we then lower our colors? Oh! no indeed. With more experience than the fathers, more knowledge, more tools, we can get better results. We can, we do, we will, where there is an inducement. Our flag shall ever be kept at the mast head, however better returns other industries may give. (Applause.)

Prof. Craig: It is well to be reminded by a paper like this that there were good fruits in those days and that in this age of commercialism we are losing important ideals. I now wish to read a letter which Secy. Taylor has just placed in my hands.

ROCHESTER, N. Y., Sept. 8, 1903.

WM. A. TAYLOR, ESQ., Sec'y Am. Pom. Society.

Dear Sir: Fully appreciative of your valued favour of the 4th inst., and the forthcoming meeting of your Society which has done so much to advance the interest of pomology, both here and abroad, I nevertheless, extremely regret my inability to be present with you this week. Owing to recent illness, I hardly feel able to undertake the journey to your beautiful city at present; I shall be with you in spirit however, if not in person; and I extend to you, one and all, herewith, my best wishes for the continued advancement of a Society to which I feel proud to belong. Fraternally and sincerely, GEO. ELLWANGER.

Prof. Craig: You have just heard of Mr. Ellwanger as one of the charter and continuous members of this Society, and in this connection we would like to remember another name which has already been referred to by Mr. Strong in his able paper,—Patrick Barry. The younger members of this Society only know of his good works through the books and records which he has left. He is with us no more but his worthy son is with us. I found him here today and only a short time ago I seized him and said that he must speak tonight. He consented and we shall now be very glad to hear from Mr. W. C. Barry.

3. PROGRESS IN NEW YORK.

W. C. BARRY, ROCHESTER, N. Y.

Mr. Chairman, Ladies and Gentlemen: The Chairman has stated the case exactly. To appear before an audience like this and attempt to speak without preparation is certainly assuming a great deal, so I trust you will accept my apologies.

A retrospective view of fruit culture during the last fifty years is not only history but constitutes an interesting story if it is properly told.

We can best realize what has been accomplished by consulting the Catalogue of fruits of the American Pomological Society beginning with the first issue and continuing to the last volume. We shall see that in a few years a vast amount of work has been done. Hundreds of varieties of fruits have been thoroughly tested in a variety of soils and climates, and their values accurately determined. The work has not been of the haphazard sort, but methodical, thorough, reliable and permanent, as the results have abundantly testified.

Information of the highest importance and value to the American people has been collected and disseminated, and the extraordinary prosperity now in evidence on every hand is due in a great measure to the valuable products of the soil in the way of fruits that are now reaching the various markets of the world.

The careers of these pioneers in fruit culture are fully as remarkable as of those engaged in other pursuits. From small beginnings they in time acquired large properties and conducted extensive and profitable enterprises. Fruit culture became recognized as one of the most important industries of the land, and today holds its own among the leading undertakings in which men are engaged.

It must not be forgotten that our predecessors undertook and conducted their labors unadvised by scientific workers. Now men of knowledge and experience are prepared to give advise whenever difficulties are encountered. Insects and diseases which at one time threatened the destruction of the industry have been studied and controlled, and what appeared to be a formidable obstacle has really resulted in good by improving cultivation and arousing greater interest.

Agricultural Colleges and Experiment Stations are devoting great attention to fruit culture. New varieties, methods of culture, fertilization, diseases and insects are all studied thoroughly and important information for planters is obtained and published.

In furthering pomological endeavor, we of New York point with pride to the monumental work of the Downings, of John J. Thomas of Caywood, of Ricketts and others. The influence of these men was far reaching and will live while fruit growing continues in New York.

Truly great progress has been made in the past but I am certain that the future will be marked by still greater achievements and that fruit culture will advance in a manner to maintain and even surpass the records already established.

[Note by the Secretary: This sketch relating to New York State fruit growing should not appear without including the name of Patrick Barry, for many years the president of the Western New York Horticultural Society. His knowledge of fruits was of the intimate personal kind and his influence in promoting fruit culture in Western New York most potent.]

Professor Craig: There are many men we should like to hear from tonight. Mr. Manning of Massachusetts, Mr. Platt of Connecticut and others. These men have stood by the car of pomological progress, and should be represented but time will not permit. Now we are going to move on to the region north of this—Canada. We shall call upon Prof. W. T. Macoun of the Experimental Farm, Ottawa, Can., who will speak for the Province of Ontario.

4. ONTARIO.

W. T. Macoun, Ottawa, Canada.

Mr. Chairman, Ladies and Gentlemen: In beginning I should like to say on behalf of that little band of delegates who come from that great country to the north of you, that we feel especially pleased to be with you at this meeting where we feel ourselves perfectly at home and on the same footing as yourselves. There are very few international societies in America today. I believe that there should be more. We have great pride in finding in the Chair tonight a Canadian, who through his native energy and ability has attained to the highest, or one of the highest chairs of Horticulture in America. We are particularly pleased and gratified to see him here tonight, and take this public opportunity of expressing our pride in finding him in this high position in the Horticultural World.

The Province of Ontario, of which I am to speak, is a very large one. We have in that Province about two hundred and twenty thousand square miles of territory. This Province extends from latitude 42 to latitude 52. Over this great territory we are able to grow what we consider to be the finest fruit that can be grown in the world. One of our speakers thought tonight that he could grow the finest fruit in New England, but we beg to differ from him, and we call your attention to the exhibit in the hall which, we think you will agree with us, contains the finest fruit in the hall. We believe we have in Ontario the finest country for fruit, and we in Ontario are beginning to produce fruit very abundantly. Last year, which was not more than an average one, there were produced in that Province more than forty-eight million bushels of apples from about seven million bearing trees, and there are besides that about three and one-half millions more young trees coming on. The development of Ontario in the past twenty or twenty-five years has been very great, and some of the principal causes of this great development are first of all, the discovery of the means of controlling injurious insects and diseases which have caused so much destruction both in Canada and in the United States during the last fifteen years and more. During the last few years our cold storage facilities have been increased. Our transportation facilities have been improved. There is also the Fruit Marks Act, in conjunction with which there is a well organized system of fruit inspection whereby any fruit put up in a closed package may be examined by a government official, and if it is not up to the mark, it will be confiscated. You will hear more about this later on from Mr. W. A. McKinnon.

Now, what have been the agencies which have brought about this development of Horticulture in Ontario. There are several principal means, first of all being the Ontario Fruit Growers' Association. This organization has about five thousand members. It has affiliated with it from forty to fifty Horticultural Societies. In addition to this there are other affiliated fruit growers' associations in different districts in the Provinces. Besides this there is a monthly publication called the Canadian Horticulturist, which is sent to every member and by means of which information is conveyed to all these five thousand members and to any others who have the opportunity to read it. In addition to this paper the Ontario Fruit Growers' Association has the control of thirteen fruit experiment stations in the Province. Most of these fruit experiment stations have been in existence about ten years, and the experimenters who are chosen with great care as is proven by the good work which has been done, are men who have made a specialty of growing strawberries, apples, peaches or some other fruit, and in taking charge of the experiment station, they continue to specialize on that branch of fruit growing in which they have been most interested. New varieties are sent to the different experimenters and instructions given to carry on experiments from time to time.

There is a Dominion Experimental Farm with which I am connected, at Ottawa, at which we are trying to do work, which will be of interest to the fruit growers of Ontario, and also to the people in other parts of the Dominion. I have not time to go into the experiments, but you can obtain the results of these by writing to the Farm for reports. It may however, be well to say that this Farm has been established for sixteen years and that the horticultural department which is a large one has been of great assistance to the fruit growers of Ontario. Experiments are carried on in many different horticultural lines and bulletins published from time to time.

Then there is an Agricultural College at Guelph which we consider the best Agricultural College in America. You have at many of your experiment stations, Canadians who have graduated from that college. Besides these means which have helped develop Horticulture in Ontario, I should like to draw attention to another means which I think is doing more perhaps than all of these, it is called the orchard meeting—the summer orchard meeting. Orchard meetings were organized a few years ago by the Department of Agriculture at Toronto. Men who are practical horticulturists are sent out by the Department and they go to a well-known orchard in a district. Circulars are sent out beforehand to the farmers and fruit growers of that district that a meeting is to be held on a certain farm ; which usually results in a large attendance, and the delegate who is sent gives a practical demonstration in the orchard. He discusses whatever subject the people seem most interested in, and actually goes through the process of grafting or pruning or anything that may come up. It is a splendid opportunity for farmers to have answered those questions which are troubling them at the time the meeting is held. I think these meeting are very good things because farmers can go back to their farms and put what they have learned to a practical test. My time is up. Thank you very much.

Prof. Craig: There is a region north of New York and Vermont and south of Labrador under Canadian jurisdiction which has to be reckoned with as a fruit growing region. It comes next on the list and is to be dealt with by Mr. Wm. Craig, Jr., of Abbotsford, Quebec, Canada.

5. QUEBEC.

WM. CRAIG, JR., ABBOTSFORD, P. QUEBEC.

This great tract of country more than equalling in area all New England is not a favored fruit region in all its parts. We have not yet evolved orchard fruits sufficiently ironclad in constitution to withstand the rigors of Hudson Bay climate. Nevertheless Quebec has enriched American pomology by the gift of an apple which has added abundantly to the wealth and comfort of the people of North Eastern America. To know this apple is to appreciate its great beauty and its surpassing fine quality. But one should have it grown in the islands of Lake Champlain or in Western Quebec to secure it in all its glowing beauty and in all its crisp lusciousness. You have no doubt guessed ere this that there is only one apple meriting this description—La Belle Fameuse. Quebec Tradition—because precise history fails—tells us that the Fameuse came to us with the advent of the Norman colonists. It is the characteristic apple of the upper St. Lawrence valley, and I might add of the Lake Champlain region.

Fruit growing in the Province began, as no doubt it did in New England, with the growing of seedling fruits in the gardens of those who had brought with them from the old land a love of horticulture. The early gardens of Quebec and Montreal were famous for their collections of apples and even of pears. From these early plantings many varieties of some local fame have originated. In addition to the Fameuse and its large seedling progeny, might be mentioned St. Lawrence, Pomme de fer and Canada Baldwin.

The fruit regions of the Province may be roughly divided into three sections. (1) The lower St. Lawrence. (2) The Montreal region. (3) The Champlain and Eastern Townships. Of these the climatic conditions are most severe in the last named. It is rather remarkable that domestica plums are cultivated with a fair degree of success ninety miles northeast of the city of Quebec. The trees are seedlings produced in the region. They are grown low and are much protected by a heavy snowfall. The horticulture of this region has changed little during the past quarter of a century. In the Montreal and Western section of the Province, growers are realizing the advantage of modern methods. The cardinal mistake of apple growers in this section was close planting. Trees were set 20 to 25 feet apart, or even closer. Tillage has thereby been imperfect or prohibited. Many old orchards are thinning themselves by the slow and painful process of natural selection. These old orchards furnish valuable object lessons to the wide-awake horticulturists of the rising generation who are profiting by them. The Quebec Pomological Society, which Mr. Jack and myself have the honor to represent and from which I wish to present greetings to this honorable body, is taking an active part in enthusing the advance and in enthusing the young. Clean culture is not advisable. The sod mulched or the cover cropped orchards give profitable results in the main.

An interesting epoch in the pomological history of the Province was the introduction of the so-called Russian apple in large numbers and in a spirit of pure unbiased disinterestedness by the late Charles Gibb, a resident of Abbotsford, Quebec, and for a number of years an active member of your Society. These apples have left an impress upon the pomology of the Province. But I am not prepared to say that they have added much of permanent value. A few handsome summer and autumn varieties have been given us, but the crying need is reliable winter sorts, and these have not appeared. In my own case most of the Russian apples are being top-worked with something that will keep and is good to eat Still the northern portions of the Province have been benefited. The effort of our Canadian pomologist was distinctly unselfish and we revere his memory.

To sum up our present condition it is just to say that the spirit of progress is in the air ; varieties are being studied ; methods of tillage, of spraying and pruning, are being tried, and the methods of the amateur are giving way to those of the commercialist ; and while we do not expect to greatly influence the foreign markets with the quantity of our fruit production, yet we shall keep in mind the influence of the golden thread of adaptation upon the quality of our fruit products, and shall stick to those which thrive best in our soil and climate. As evidence of the possibilities of apple production in the Province in illustrating the appearance and character of the fruit, I would in all modesty and humility submit for your inspection the samples which stand before you.

Prof. Craig : The next gentleman from Canada is one who worked hand in hand for years with our own Downing in studying varieties of fruits and who in his own Provinces is reckoned as the most expert judge of varieties in the country, Mr. R. W. Starr, of Wolfville, N. S.

6. NOVA SCOTIA.

R. W. Starr, Wolfville, N. S.

I do not come before you as an off hand speaker, for I am not that. My labors have been more in the field than on the platform. I had written down a few notes hurriedly to present to you, when the chairman suggested to me that he wished me to give you something of a historical view of the growth of Pomology in Nova Scotia. To do that I must set aside a good portion of what I have written and give you verbally from memory what he wishes. In the first place when the New Englanders came down from Connecticut and settled on the deserted lands of the french Acadians, they found in the old gardens small orchards of fruit that had been deserted for some years, but were still bearing fruit. The finding of fruit had more to do with the settling on those lands than anything else.

These fruits were mostly seedlings and some of them are bearing there today, more than one hundred and fifty years old. They are now very large trees. Among the new settlers there were Englishmen. Probably among those who did most for Nova Scotia was Colonel John Burbidge, an Englishman who planted an orchard of grafted varieties of trees. Some of those he grafted about the year 1760 are bearing fruit today, among them the trees you call the Roxbury Russet, which we call the Nonpareil Russett from the name that he gave them. As far as we can find out he brought them into this country. Now Downing says that the Roxbury Russett originated here near Boston. We have it grafted with us in 1768 and the type was said to come from England. It doesn't matter. We have the apple and it is a very valuable one. There is another apple that he grafted. We know it as the English Golden Russett. Downing says in his letter to me, "The finest apple you ever sent me," and I sent him a great many.

After that Charles R. Prescott of Halifax, who settled in Cornwallis and planted his orchard, gave us a legacy of the best standard fruits we have today. The Ribston pippin is the best that he has and today if you are going through an orchard in Cornwallis or Annapolis, you will find no trees bearing better than they are. Among the rest that he brought in was the Blenheim, Fameuse, Gravenstein, Alexander and Astrachan. From Massachusetts shortly after that he got the Baldwin, the Rhode Island, Greening, Esopus Spitzenburg, Flushing Spitz and many others. Those apples are today grown as standards, or at least many of them are. The Fameuse not so much so, because it is thrown out of our market by the Greening which comes in the same season.

Another man to whom we are very much indebted—and mind you these are all amateurs—is the late Dr. C. C. Hamilton, President of our Society from '60 until the time of his death. His work was largely experimental, and he grew a great many varieties of apples and the knowledge he gained was given freely to all the same as his predecessor, Mr. Prescott. The business of fruit growing is one of our main industries in the section of the country today, that is the valley of the Annapolis.

Present Status of the Industry: It is now pretty generally understood that our great industry in the valley of the Annapolis and Cornwallis Rivers, and also in the adjoining Valley of the Avon, is the growing of apples for export.

Throughout this section of the country, which is frequently called the Fruit belt of the Province, the farms are usually small, say from 30 to 100 acres of arable uplands. These are generally supplemented by a few acres of dyked marsh where within reach of tidal rivers, and in other cases by intervails and low meadows. These lands are devoted to hay and grain crops which are fed to stock, the manure from which is applied to the uplands. Those uplands have been, and are still being largely planted in orchards, every year sees a large increase in the acreage set with apples. Of course there is a large proportion of this orcharding yet in the growing stage, and not yet yielding much income from the fruit, nevertheless the estimated crop for 1903 is half a million barrels.

There has been a great improvement during the past few years in the methods of cultivation, in spraying, in harvesting and storing the fruit, and in sorting and packing for market.

It is not many years ago since the method of cultivation in the orchard was such, that the crop of hay or grain that could be got seemed to be the main object, and the fruit only a by-product, and I am sorry to say that in some places the custom still exists, but as a rule all this is changed, the cultivation is of that description which is supposed to be best for the fruit crop, or for the young growing tree, and any other crop taken from the soil is the by-product. Clean culture from early spring until the first to the middle of July followed by cover crop is now the rule of the progressive orchardist in his bearing orchards.

Spraying is very generally practiced, and the solutions are more carefully made than at first. Farmers find it best to follow in minute detail the instructions issued in the bulletins of the Department of Horticulture.

Greater care is being used in picking and sorting the fruit, all crops being kept by themselves, the autumn and early winter and fancy varieties are usually packed in the orchard as soon as picked, from portable packing tables, or trays the height of a barrel. No fruit for export is allowed to lie on the ground or to be exposed to the weather any longer than is possible after it is picked from the tree. The packages are then removed to the fruit room, or cellar, and kept as cool as possible until the time for shipment has arrived when they are closed and sent away. This method has been adopted to make as little handling of the fruit as possible.

New, and specially designed fruit rooms and warehouses are being built all through the country both by orchardists on their own farms and by dealers and commission merchants at the different Railroad Stations. The first are for the safe storage of the crop, the second for the convenience of loading cars in a few hours, on the arrival of a steamer at Halifax, to take them away.

Other fruits can be, and are profitably grown. Almost all pears except the later Winter varieties do well, but such varieties as Vicar, and Easter Beurre, although they grow and bear, do not seem to mature sufficiently to ripen with any flavor. Quinces are a very sure crop, and all the varieties seem to succeed, if fairly treated. Plums generally can be depended on for a good paying crop, all the best varieties of Domestica Plums seem to succeed. The Japanese (*P triflora*) have been quite extensively planted within the last few years, but it is yet a question whether they will continue in or not. Wickson will be condemned for want of hardiness and others may follow. The P-*Americana* and P-*hortulana* group have been tried but are not wanted. [For additional information regarding Nova Scotia see Report of general Fruit committee Sec'y.]

7. THE STATES OF THE MIDDLE WEST.

COL. G. B. BRACKETT, WASHINGTON, D. C

The rise and progress of western horticulture was coincident with the settlement of the great west, and like all other enterprises of that day, it had its small beginnings. Like Horace Greeley's young man who went west, it "grew up with the country."

The pioneers of this branch of agriculture were the sturdy men of energy who left their homes in the east and pushed their way westward in the sunset's trail to found new homes and a new civilization on the broad prairies of that newly acquired territory over which the buffalo and the Indian had roamed unmolested for centuries. Many of these men were novices in the art of fruit culture—beginners without horticultural experience. They were obliged to go slow and gain their knowledge and progress by dint of hard labor in that school of experience where tuition is always highest and results most enduring.

They took with them from their old homes, seeds, trees, scions and plants of well-known, reliable old varieties that were tried and true. They planted them with the greatest confidence of success. The question of adaptability to new environment was never dreamed of. No one had trod the path before them. They could learn fruit growing only in the school of sad experience.

At the outset their trees grew luxuriantly in the rich virgin soil—a humus that had been accumulating for untold ages and hitherto untouched by the hand of man. These trees grew and bore fruit most fair to behold and more luscious than the nectar of the gods. No insects to molest them! No fungous diseases to mar their beauty! But alas! a change came over the spirit of the fruit growers' dreams. In the fifties a cold blast from old Boreas swept down over the land, blighting their fondest hopes. For but few varieties among the hundreds withstood that terrible freeze. This was the one great crisis that was needed to set the horticulturists to studying the laws of nature. Halt and begin anew was the command. The question of adaptability of varities to environment must be studied. New varieties must be originated that would be adapted to the new condition, instead of importing and transporting old ones from eastern homes. Disaster is the mother of progress. A new impetus was given to horticulture, greater interest was awakened and more systematic methods of culture began to be practiced. Commercial orcharding began to revive and success rewarded the untiring planter, until today the entire prairie country is dotted with hundreds of acres of the most beautiful orchards to be found in the world.

The time allotted permits me to mention but few of that brilliant galaxy of untiring pioneers in that new field of horticulture, and the part they took in the development of an industry that has since grown to such enormous proportions.

The zeal of two pomological historians has placed much of this valuable data on record. These men are W. H. Ragan of Greencastle, Indiana, formerly, but now of the office of Pomologist, Department of Agriculture, Washington, D. C., and A. H. Ernst of Cincinnati, Ohio. The latter's valuable contribution to pomological literature was chiefly compiled from personal letters received by him, from many pioneer fruit growers.

Ohio.—To the sons of that revered fighting general, Israel Putnam, much credit for early fruit plantings in Ohio is due. In 1796, after assisting to establish that New England colony on the Muskingum river, Israel Putnam returned to New England to obtain choice apple scions. He secured a one-horse wagon load of scions and hired a man to bring them to Ohio—the then wild west. For aught we know his driver is still proceeding westward! The man delivered the scions but kept on the western trail with that horse and wagon and was never heard from again. A list of leading varieties of that importation by Putnam was published in the *Ohio Cultivator* in 1846. The Putnams began the nursery business at Belpre, Ohio—perhaps the first western nursery ever established and maintained it until their death in 1821. Among the varieties imported by them were Spitzenburg, Gilliflower, Pomme Royal, Rhode Island Greening, Talman Sweet, etc. A Mr. Dana established the second nursery in Ohio in 1817: and about the same time Zebulon Gillett & Son established an orchard at Quaker Bottom, Lawrence Co., Ohio. They grew such varieties as Priestly, Milam, Roxbury Russet, Blue Pearmain, Summer Harvey, etc. To Joel Gillett is accorded the honor of the discovery of Rome Beauty apple, a favorite for sandy soils that still holds its prestige in many parts of the South and West. Silas Wharton of Bucks Co., Pa., was also a pioneer fruit grower at Waynesville, Ohio, about 1820 to 1849. He had had some experience with fruits in Pennsylvania, and was therefore the better prepared to succeed in the nursery business. He grew Morello, May Duke and Carnation cherries, Red June, Summer Pearmain, Trenton Early, Maiden Blush, Summer Rose, English Hagloe, Ribston, Golden Pippin, Pennock and many other well-known old varieties of apples. The Miami Valley and neighborhood about Dayton, O., is more indebted to Silas Wharton it is said than to any other individual for intelligent fruit growing at that early day. He was a warm friend of Coxe the pioneer author on pomology and doubtless Coxe secured much valuable data from him. Mr. A. Hikes of Pennsylvania was also a pioneer nurseryman in Ohio.

Among the prominent pomologists of Ohio the name of J. P. Kirtland is deserving of special mention for his valuable service in originating a number of new varieties of cherries and pears, and for other experiments in propagation of fruits and ornamental plants. But one of the most prominent figures in horticultural work was that eminent German, Andrew H. Ernst, president of the Ohio Pomological Society from 1847 until his death in 1860. He was proprietor of one of the best nurseries of that day. It was located in the suburbs of Cincinnati. Mr. Ernst's early life was one of struggle and poverty; his later years were spent in affluence and comfort, and the exercise of the correct culture that made him a zealous opponent to the twin vices of savagery—intemperance and slavery. Beautiful Spring Grove, one of the finest cemeteries in the United States was the subject of his fostering care—and there he lies asleep and at rest from his labors.

He was the friend and co-worker of Dr. Warder, and much valuable data on the then rare fruits, he secured for Dr. Warder. Mr. Downing was also much indebted to Mr. Ernst for valuable pomological data. Too great a tribute cannot be paid to Mr. Ernst, the pomologist, the wise counsellor, the public benefactor, the lover of art and literature. The advancement of all that is good for humanity was ever his life-work.

Cotemporaneous with Andrew Ernst, in pomological work, was a notable figure, Nicholas Longworth. The culture of the strawberry and the grape received a great impetus through his skill. Hitherto but little attention had been paid to anything but tree fruits. He was a keen observer, painstaking and practical. He was a great land owner and persevered in endeavoring to make the hillsides of the Ohio river rival the Rhine as one continuous vineyard. He allowed his lands to go to German settlers and was content with a share of the fruit raised for pay for rental and offered in all instances to buy the growers' share. The European grapes were not adapted to the country and he lost money on the venture. Hearing that Major Adlum of Georgetown, D. C., had discovered a grape called Catawba, he was the first to introduce it in the west.

The sex of plants so well-known to all fruit growers now, was studied out by him concerning the strawberry, and his discovery made him the jibe of every newspaper scribbler and pseudo-horticulturist in the land. He met all their shafts of ridicule with clinching arguments and the jury of a discriminating public decided in his favor, until now—all are on his side of the question ! It has been truly said Mr. Longworth's name will be remembered while the Catawba continues to spread its leaves, twine its tendrils and bear lucious fruits.

One of the most prominent pomologists of the country and one of Ohio's greatest men, was Dr. John A. Warder, author of "American Pomology," one of the finest text-books on the subject of the apple ever written. [See Biographical sketch by W. H. Ragan, Page 72.]

My report of Ohio would scarcely be complete without a brief mention of the grape growing—principally Catawba—on Kellys Island, Lake Erie, and near to Sandusky. This interesting planting was begun in 1846. The island contains 2,800 acres and the peculiarities of soil and climate are so conducive to the remarkable success of the grape that the island is a veritable hive of this industry ; and for miles inland around Sandusky the industry flourishes, making it one of the finest grape centers in the union.

In connection with grape growing the name of George W. Campbell of Delaware, Ohio, late Vice-President of this Society, should be mentioned. He was the originator of a number of varieties of grapes but those that will make his name enduring are the Lady and Campbell Early.

The Ohio Pomological Society was organized in 1847 with A. H. Ernst as president and M. B. Bateham, secretary. Mr. Ernst continued in the presidential chair until his death in 1860. He was succeeded by Dr. Warder, who was also a life incumbent. Among the prominent fruit growers and pomologists of that Society were : Dr. J. A. Warder, G. W. Campbell, M. B. Bateham, Nich. Ohmer, D. C. Richmond, F. R. Elliott, S. B. Marshall, R. G. Hanford, R. Buchanan and S. S. Jackson. Too much credit cannot be given to these sterling, energetic pioneers who cleared virgin forests and made fruits to grow under conditions hitherto unknown.

Indiana.—Among the horticulturists of the United States the name of Reuben Ragan as the pioneer nurseryman of Indiana deserves first mention. He established a nursery in Putnam County, Indiana, in 1820. He had some choice varieties of fruit for that era, obtained principally from Kentucky. He continued in the nursery business until 1851, and his nursery was one of the most interesting in the State. As a pomologist he had but few equals, and his efforts to promote the "Art that doth mend nature" will ever be appreciated by the pomologists of the west and his loss will be long felt by the State he so much benefited.

Following in the footsteps of this pioneer was his son, Wm. H. Ragan, who carved his name on fame's record from nature's school. He learned pomology in all its branches in the difficult but effective school of experience. He was for many years secretary of Indiana Horticultural Society, and for it did exceedingly efficient work, as his ideas were progressive. As secretary of the Mississippi Valley Horticultural Society his work is also well-known and appreciated. The reports of this Society written by him are some of the most readable in pomological literature. He is chairman of the committee on the Revision of Catalogue of Fruits recommended by American Pomological Society, and has been a great help to the progress of pomology throughout the country.

Among the early fruit growers and nurserymen that settled in Indiana, and worthy of special mention were James Sigerson and Thomas W. Wallace. They were contemporaries of Reuben Ragan.

Indiana Horticultural Society : From authentic source it appears that the first organization for the promotion of horticulture in the west was the Indiana Horticultural Society.

A preliminary meeting was held at Indianapolis, August 22, 1840, at which it was agreed to meet for the purpose of affecting a permanent organization on October 10 following. At the appointed time a number of citizens assembled at the court house, Indianapolis, organized, elected James Blake, chairman and J. S. Willets, secretary.

In addition to a large collection of fruits, flowers and vegetables that were exhibited and discussed, Rev. Henry Ward Beecher, probably the moving spirit in getting up the organization, delivered an able and interesting address. The regular meetings of the Society appear to have been biennial. In 1842 the meeting and its accompaning exhibition of horticultural products seems to have been full of interest. Only one premium—a set of silver teaspoons—was offered, and that for the best seedling apple. This would indicate that the west even at that time was not neglecting to encourage the production of new varieties better than the old ones, and such as might have special adaptability to the region. The Society was kept alive and active until the removal of Henry Ward Beecher from Indianapolis in 1845. The Society left without its main support suspended proceedings.

In October, 1860, the Society was reorganized with Reuben Ragan as first president and W. H. Loomis, secretary. It proved a prosperous Society among similar organizations in the Ohio and Mississippi valleys. During its extent it has been presided over by such ken well-known men in pomology, as Reuben Ragan, I. D. G. Nelson, Dr. Allen Furnas, Sylvester Johnson, C. M. Hobbs and others of like energy, while among its secretaries were W. H. Loomis, George M. Beeler, W. H. Ragan, C. M. Hobbs, Prof. James Troop and others.

Indiana has made fair progress alongside other western States in the matter of fruit growing. The careful selection of varieties of its family orchards is especially noticeable. It is one of the States in which the home orchard rather than the commercial orchard type of fruit growing abounds.

Kentucky.—Kentucky belonging to Virginia was mostly settled by immigrants from that State. They brought their families and the negroes they owned to the lands they acquired in the new State. Pennsylvania, Maryland and New Jersey also furnished a quota of settlers who were enterprising enough to determine to make comfortable homes for their families. The first nursery was established by John Lightfoot, south of Kentucky river in Anderson County. From this nursery many good orchards of first settlers were planted. Edward Darnaby in 1790 began the cultivation of peaches, pears and grapes in the big bend of the Kentucky river. His first trees for transplanting were in such great demand that he only obtained a very small planting on his own orchard site.

Illinois.—In the pioneer days of Illinois, before the time of railroads and easy communciation, the horticultural development, the same as of other sections of the west, was largely dependent on the establishment of local nurseries, and as the men who took up this line of work were generally those who had a taste for horticulture, and the nurseryman a leader in all horticultural matters.

Information which we consider authentic gives the estabiishment of the first nursery of grafted apple trees in the State to Joseph Curtis, 1818, near Paris, Edgar County, on the eastern border of the State. Mr. Curtis is said to have been the first one practicing root-grafting at his former home in Pennsylvania. Large orchards for those times were planted in Edgar County, and from 1840 to 1856 quantities of apples were marketed in the neighboring counties, and even hauled to Chicago in wagons.

M. Girardin, a Frenchman, brought pear trees from France in 1780 and planted an orchard near Cahokia, St. Clair County, just below St. Louis on the Illinois side. In 1868 some of these trees were said to be three or four feet in diameter, healthy and bearing fruit every year. Seedling apple orchards were in bearing in this county in 1818 and the first orchard of grafted trees was planted in 1820.

In Clinton County, adjoining St. Clair on the east, seedling orchards were planted in 1817 and 1818 and grafted ones in 1822. At Quincy, Adams County, Ex-Governor Wood planted apple seed in 1820 and started a nursery, from which he planted an orchard in 1824. Apple seeds were sown in Bureau County, north part of the State, 1830, from which small orchards were planted In 1836 John Bellanger brought grafted trees from Ohio and established a nursery, from which orchards were planted at Princeton by Arthur, Cyrus and John H. Bryant and others. From 1840 to 1850 a number of orchards were established in this county, one of which is still in existence and in the hands of the family of the projector.

Joseph Curtis is said to have been president of the first horticultural society of eastern Illinois, but its existence was probably brief.

The Illinois State Horticultural Society had its beginning with a temporary organization which was effected Oct. 15, 1846, with Edson Harkness as president and A. P. Bartlett, secretary. In 1847 an effort was made for a permanent organization, but with only partial success. Nothing further appears to have been accomplished until Dec. 17, 1856 when a meeting held at Decatur resulted in a permanent organization with Dr. E. S. Hull, president and J. E. Starr, secretary.

Since the close of the Civil War commercial orcharding has made great strides in Illinois, particularly in central and southern portions and she now ranks amongst the foremost in the United States in acreage and production of her orchards. While business energy and push have in late years put Illinois to the front as a fruit producing State, it is not too much to say that it was the labor, skill and pertinacity of its pioneers in horticulture, aided by horticultural societies, which laid the foundations of one of her greatest industries.

Michigan.—Michigan as a fruit-growing State has long attained an enviable reputation in the ranks of pomology in the west. Ever since its founding as a territory it has made rapid strides ; its fruit growing history began with the French Canadians who introduced the pear and apple in many varieties that flourished with wonderful success. In this land of the revered Father Marquette the French immigrants brought to the eastern border of the State and along Detroit river many fruits from their former home in Normandy. They settled along both sides of the Detroit river and the fruit trees that fringed their rude cabins were indeed picturesque as well as profitable. To this state pear trees were brought from France as early as 1749, and were planted along the river side of the Witherell farm near Detroit. In no other locality can such pear trees be found as those ancient pear trees now standing along the bank of the Detroit river.

The early history of Michigan Pomology is so voluminous that it is impossible to do it justice in a short period of time and I can only mention a few incidents that mark the progress of pomology in this, one of the foremost fruit states of the country.

The earliest horticultural Society in the State was probably the Detroit Horticultural Society established in March, 1841, with John Winder, president, John C. Holmes and B. G. Stinson as vice-presidents, Howard Webster and John Lumsden, secretaries, and Thomas Hall, treasurer. This Society continued actively useful until 1853 when it ceased to exist. On Sept. 9, 1853, a meeting of nursery men of southern Michigan convened at Jonesville, and they agreed to form the Michigan Nurserymen and Fruit Growers' Association. This organization was unfortunately short-lived. In 1857 the Michigan State Horticultural Society was organized, but with no better results.

The State Pomological Society was organized at Grand Rapids in February, 1870 ; S. L. Fuller, president, S. S. Bailey and L. S. Scranton, vice-presidents, and A. T. Linderman, secretary. This newly organized Society flourished and now under its changed name, "Michigan State Horticultural Society," it is one of the foremost organizations of its kind in the west if not in the whole country. Among its prominent officers and members appear such names as J. P. Thompson, T. T. Lyon, S. L. Fuller, B. Hathaway, Prof. Beal, Chas. W. Garfield and many others of note.

Many of the pioneers of Michigan were from New York State and they brought much orcharding to the State through the medium of seeds and scions obtained in their former home country. In 1853 it is recorded that L. H. Bailey, Sr., father of our Prof. L. H. Bailey, purchased a farm adjacent to South Haven and that his apple orchards contributed very largely to the dissemination of varieties, especially of apples, many of the less common varieties having been planted and fruited by Mr. Bailey. Mr. John Williams, patentee of Williams evaporator, at an early date settled at South Haven where he established a peach orchard and vineyard.

Peach yellows having followed the railway westward appeared in this section about 1870 and the late lamented T. T. Lyon formulated the first "yellows law." Among the States, Michigan has furnished her full quota of horticulturists of prominence, among whom appear the names of T. T. Lyon, L. H. Bailey, Jr., Charles W. Garfield and many others. The state's progress in pomology has been phenomenal and every citizen may well feel proud of the noble men who have done so much to advance the interest of pomology.

Wisconsin —George J. Kellogg settled in the territory of Wisconsin in 1835. He planted R. I. Greening apple trees in 1837 or 1838, perhaps the first apple trees planted in the State. B. S. Hoxie removed to Wisconsin from Maine in 1846. He was a member of Wisconsin State Horticultural Society for more than 25 years and during his life time he never missed a meeting. He died in 1901. A. J. Philips, a Philadelphian by birth, has lived in Wisconsin since 1855. In 1857 he joined the Wisconsin State Horticultural Society and has missed but two meetings. Geo. P. Peffer, W. A. Springer, E. W. Daniels, S. I. Freeborn, A. G. Tuttle, J. C. Plumb, F. K. Phoenix, J. M. Smith and others are numbered among the noted fruit growers in Wisconsin. An orchard of 50 apple trees was planted by the elder Bone, near Racine in 1845 ; 27 of those trees were reported living in 1899. J. C. Plumb of Massachusetts removed to Wisconsinin 1843. F. William Loudon from Vermont settled in Wisconsin in 1845. B. F. Adams came to Wisconsin from New York in 1848.

Wisconsin has kept apace with the other western States in progressive horticulture.

Minnesota.—Repeated attempts and bitter, disheartening failures characterized the early culture of apples in Minnesota. Pioneers planted but did not harvest. Orchards to the third and fourth planting failed. This constant drain on the pocket with no ray of hope for the futnre caused the pioneers for a time to desist from planting. Horace Greeley said to one of Minnesota's leading citizens : "I wouldn't *live* in Minnesota ! I wouldn't live in any State where you can't raise apples." The apple, be it known, was one of Horace Greeley's principal articles of diet.

The pioneers were undaunted. Pluck was their stock in trade. Blizzards and blight had effaced everything they had planted. They came to realize that they must search for seed that would produce a hardy apple. Among the first to successfully raise apples in this State was Mr. John Shaw formerly of Maine. This was about 1860. Hon. Eli Robinson also had an orchard of a few trees at that time. Pears and Siberian crabs were next tried ; grapes and small fruits came later. But to the late Peter M. Gideon of Excelsior belongs the credit of producing the finest seedling apple ever known to that State if not to the entire northwest—the beautiful and extensively cultivated Wealthy. Nobody but those pioneers understand the long, patient early struggle which was their task for life of producing apples that would make their desert blossom as the rose. How well they have succeeded the extensive and profitable fruit industry of that State to-day attest and to which the splendid exhibit of new, hardy seedling apples now on exhibition by Mr. Wyman Elliott gives additional promise and encouragement. To the Harrises, the Robinsons, Gideons, the Kelleys, Fords, Elliots, Norrises, Perkins and Smiths this State is indebted for undaunted courage in fruit planting when the "clouds lowered through so many dark years of failure."

I regret that time forbids me to enumerate many incidents of interest to pomologists that occurred in the lives of these illustrious men. Peter M. Gideon left a monument more lasting to his memory than shafts of stone. Monuments of stone crumble with the lapse of time but the name of Peter M. Gideon is enshrined in the hearts of the people wherever the Wealthy apple is known. He carried the courage of his convictions. He was fearless, undaunted and knew no compromise. The world is left richer by his worthy bequest. He was an indefatigable worker of highest ideals with an optimistic faith in attainment. The windbreak for the prairie orchards and the hardy apple for planting—the apple carefully selected from thousands of seedlings—have solved the orchard problems for that country. The Horticultural Society has done excellent work ever since its establishment in the sixties and men of the stamp of Harris and Elliott and Latham and Gideon have carried the work forward to most ideal success.

To Minnesota belongs the credit of making the most rapid progress in orchard extension of any of the prairie states during the past ten years. Its area of orchards has increased *five* times the original plantings of 1890.

Iowa.—Tree-planting in Iowa was commenced about 1836 and was confined mostly to counties lying along the Mississippi river.

My own personal observation of the State dates only from 1841 when my father, Reuben Brackett, a native of Maine, moved from Cincinnati, Ohio, to Iowa while it was yet a territory over which Indians were still roaming and from whom the first purchase of land had been made, extending back from the Mississippi river only fifty miles. He located at Denmark, a small town just laid out and settled by three families from New Hampshire who had traveled across the country by wagon train. With half bushel of apple seed washed by myself from pomace of a cider mill in sight of Cincinnati, my father started the first nursery in Lee County. Three other nurserymen had preceded him. Henderson Lewelling moved from Salem, Indiana, to Henry County, Iowa, in 1836 and in 1837 planted a small nursery of 35 varieties of apples besides cherries, pears, peaches and plums. The business was successful until 1848 when he concluded to follow Horace Greeley's advice and go west, and after filling a box with soil he planted about 300 root grafts in it and loading the same on his wagon he started across the plains for Oregon where he arrived after a long, tedious journey, his trees in good condition, some of them having made a growth of three feet on the trip. This was truly pioneer horticulture and evinced a zeal worthy of the cause.

In 1837 Robert Avery, so well-known throughout the west, planted his extensive orchards and nursery in Des Moines County, and for many years carried on the most extensive nursery business in the State. In 1843-4 Dr. James Weed started a nursery and orchard in Muscatine County.

And the fruit-growers of Iowa to-day are indebted to those pioneers in horticulture for the energy and zeal with which they fostered this most lucrative branch of agriculture in that State. Following the footsteps of these men came many noble and enthusiastic workers in the good cause, but of them time will not permit me to speak.

As a matter of interest to scientists and worthy of special mention may here be noted the name of John M. Dixon, of Oskaloosa, Iowa, to whom is due the credit of having been the first man to use in a commercial way, insecticides in the form of spray. In 1875 he commenced his experiment on his orchard of 3,000 trees for the destruction of canker worm which was doing great damage. He found by using one pound of arsenic dissolved in 150 gallons of water that it was effective in destroying the canker worm and incidentally through these experiments, it was discovered that it was also a remedy for the codling moth.

The Iowa State Horticultural Society was organized June 26, 1866. Dr. James Weed, of Muscatine, was elected president; D. W. Kauffman, vice-president; Mark Miller, secretary and D. Leonard, treasurer. These officers were succeeded by others the following session, and Mr. D. W. Adams served continuously as secretary until 1873 when he was succeeded by Prof. J. L. Budd who served for a number of years in like capacity.

The severe cold weather of 1872-3 which destroyed so many orchards in the State checked the most ardent hopes of the fruit growers, and gave rise to spirited discussions in the Society meetings. The question of adaptability of varieties to environment was considered and resulted in the movement to introduce varieties from Russia. The time had come for an organized effort along new lines and it was voted by the Society to appropriate $100 to be expended under the direction of the Board of Directors for the purpose of testing varieties from that far-off country supposing that the conditions were similar to those of Iowa. The experiments of several other importations were thoroughly tried, the results of which are too well-known to need any further elaboration.

The Society at an early day established Experiment Stations in various parts of the State for testing new and promising fruits, vines, shrubs, etc., and with four auxiliary Societies in the four corners of the State, great progress is being made.

Nebraska.—Fruit culture in Nebraska in an early day was confined to the Nemaha country, a small corner in the southeastern part of the State. As civilization expanded the interest in fruit culture increased.

Among the prominent men of Nebraska who have done much to forward fruit interests were J. Sterling Morton, Ex-Gov. R. W. Furnas, J. H. Masters, D. H. Wheeler, J. T. Allan, Samuel Barnard and others. J. H. Masters, of Otoe County, commenced fruit planting in 1855 before the State government was organized, and J. Sterling Morton of same county, planted 500 apple trees in 1859. These were perhaps the first orchards of note planted in the State.

From the earliest record now obtainable the third annual meeting of the Nebraska State Horticultural Society was held at Brownville, Oct. 5th, 1871, with Jas. H. Masters, president; J. T. Allan, vice-president; R. W. Furnas, secretary; D. H. Wheeler, treasurer; and J. Sterling Morton was appointed "a committee of one to prepare an address to the people of the State setting forth all important facts relative to fruit growing in Nebraska."

The commencement of this fruit industry has continued to progress until today the Eastern part of the State is planted with apples, pears and peaches considered a safe investment.

Kansas.—In the early settlement of Kansas the idea prevailed as in the gold era of California, that fruit trees could not be grown successfully in the State. Mr. Welcome Wells, living near Manhatten, Riley County, determined to try the experiment by planting a commercial orchard of forty acres, but when his trees came into bearing he found that only about one-fourth of them were profitable.

The next man to experiment with fruits on a large scale was G. C. Brackett who planted an orchard at Lawrence, Kansas, about 1860 with such varieties as he could obtain from his father's nursery at Denmark, Iowa, and many of these were also unprofitable.

Judge Fred Wellhouse of Leavenworth, (now of Topeka,) profiting by the experience of his predecessors planted in 1876 an orchard of 117 acres adding thereto in 1878, 160 acres, and in 1879, 160 acres more.

The first eleven crops from 1880 until 1890 from this orchard yielded the owner 239, 135 bushels which sold for $125,118 08. Judge Wellhouse has continued to add to his plantings until today he has over 1600 acres and has well earned the title of the Apple King of the West. His success has been due to good judgment in selecting a few of the most profitable varieties of commercial value. He is now preparing to celebrate his 75th year by planting another large orchard. Other pioneers who have experimented largely were Dr. Wm. M. Howsley and Dr. J. Stayman, both of Leavenworth. Dr. Stayman originated several varieties, among which was Stayman Winesap now being much appreciated in many sections of the country. The efforts of these pioneers have resulted in making Kansas one of the foremost fruit growing States in the Union.

Kansas was the second State west of the Mississippi to organize a Horticultural Society which was effected in 1867 under the title of Kansas State Pomological Society when Wm. Tanner was chosen president and S. T. Kelsey, secretary, The first and only meeting under the above title was held at Lawrence. At this meeting it was voted to change the name to Kansas State Horticultural Society and a committee was appointed to draft a constitution and by-laws. The next meeting was held at Leavenworth but in 1869 it was incorporated under the laws of the State with Wm. Tanner, Leavenworth ; C. B. Lines, Wabaunsee ; Wm. M. Howsley, Leavenworth ; S. T. Kelsey, Pomona ; G. C. Brackett, Lawrence ; Geo. T. Anthony, Leavenworth ; J. Stayman, Leavenworth.

The officers of the permanent organization were President, Wm. Tanner ; Vice-Pres., C. B. Lines ; Secretary, Geo. C. Brackett.

From this small beginning, wonderful progress in the development of fruit industry and the organization of horticultural societies in this new territory began. Starting with but a handful of members the number soon increased to over 200 ; and the zeal and enthusiasm of its members was not confined to the parent organization. It spread like wild-fire all over the State until more than 50 county Horticultural Societies were organized. Such phenomenal growth can hardly find its equal in any other part of the country. It now ranks third among the western states in point of its fruit products.

Missouri.—I regret to say that I have been unable to find on record but very little history of the early orchard plantings in Missouri. Sigerson Brothers were among the first extensive nurserymen in the State. James Sigerson, the practical senior member of the firm went from Indiana to Carondolet, Mo., near St. Louis, in 1843. The business grew to large proportions before the death of the senior member in 1853.

To Norman J. Colman, J. C. Evans, L. A. Goodman, Samuel Miller, Herman Jaeger, George Husmann, Sr., Z. S. Ragan, and other illustrious men of this State, great credit is due for making Missouri one of the foremost States in the Union in fruit growng. The " land of the big, red apple " is now known the world over.

From the transactions of the Missouri State Horticultural Society meeting held in St. Louis in January, 1863, we find H. T. Mudd of St. Louis was president, and Wm. Muir of same city the secretary. Many distinguished pomologists from other States attended this meeting. Among the early workers along fruit lines were Dr. W. C. Spalding, Wm. Muir, T. R. Allen, James A. Bayliss, Dr. Edwards, H. T. Mudd, F. R. Elliott, and many others besides that brilliant galaxy formerly mentioned.

From the above historical data we find that to Missouri belongs the honor of having established the first Horticultural Society west of the Mississippi river and today she stands at the head of the list of western States in the value of her fruit products and her watchword is still " Onward." At no time in the history of the State has there been such an interest in fruit growing manifested as at the present time. Commercial orcharding is greatly on the increase, hundreds of acres being planted annually.

Arkansas.—The beginning of horticultural development in Arkansas dates back to 1876 when the first few quarts of strawberries grown at Austin were shipped to St. Louis and sold for 50 cents per quart. From this small beginning the industry has grown to a thousand carloads in one season and from a few wagon-loads of apples peddled out in the State and in Texas, there are now annually shipped 12,000 carloads of apples. Benton County now claims the distinction of having more apple trees in orchard than any similar area in the world, while Washington, an adjoining county, is not far behind. Together these two counties shipped apples to the value of about $2,500,000, in 1901. For that year the whole shipment from Benton and Washington counties amounted to about 4,000 carloads. These counties are located in the northwestern section of the State and are in what is known as the Ozark Mountain region.

The State Horticultural Society was organized in 1879 and has ever since maintained a growing interest all along progressive lines of horticulture. Many valuable new varieties of fruit have originated in the State. Prof. Stinson has placed many of these on record in a valuable bulletin.

IMPORTANT ASSOCIATIONS.

Northwestern Fruit Growers' Association.—One of the most important though not the earliest organization for the promotion of fruit growing was that of the Northwestern Fruit Growers' Association which was organized at Princeton, Ill., on December 18, 1850, at which Edson Harkness was chosen president and F. K. Phoenix, secretary. C. R. Overman, Arthur Bryant, J. H. Bryant, Samuel Edwards and many other subsequently eminent pomologists were present. Several subsequent meetings were held with fine exhibits of fruits, that of October, 1853, being held at Chicago at which were present Charles Downing, Dr. J. A. Warder, A. H. Ernst, Robert Douglas, Lewis Ellsworth and others of eminence. But the most notable meeting of this organization was that held at Burlington, Iowa, September, 1855. At this meeting there was a very fine display of western fruits, which fairly surprised eastern pomologists who were present. Among these were the late Patrick Barry and William R. Prince of New York.

In Mr. Barry's address before that large and enthusiastic audience he said: "Who ever saw before such apples and such pears as are displayed at this exposition? I never have in all my travels either at home or abroad and in this I only voice the expressions of Mr. Prince and other gentlemen from the East that are present."

The last meeting of this organization was held at Alton, Ill., September, 1857, which was a joint meeting with the newly created Illinois State Horticultural Society into which it was merged on that occasion.

Mississippi Valley Horticultural Society.—In January, 1880, the Missouri State Horticultural Society held its annual session in St. Louis, there being delegates present from Arkansas, Illinois, and other States. This resulted in a call for a meeting in September for the organization of the States of the Mississippi Valley. A large number of fruit growers from these States responded to the call and they framed a constitution and elected the following officers of the famous Mississippi Valley Horticultural Society: president, Parker Earle of Illinois; vice-president, Gov. R. W. Furnas, of Nebraska; secretary, S. M. Tracy, of Missouri; treasurer, H. G. McPike, of Illinois. One of the finest fruit exhibits seen in the west to that date was held in connection with this meeting. Subsequently this Society became the American Horticultural Society and held meetings in Cincinnati, Chicago, New Orleans, Kansas City, Cleveland, San Jose, Riverside, and Austin. Mr. Earle remained in the presidency but after two years W. H. Ragan was chosen as secretary. Five volumes of transactions were published and it held its last meeting in Austin, Texas, 1890.

SUMMARY SHOWING PROGRESS IN PLANTING OF APPLE ORCHARDS DURING DECADE, 1890–1900.

	1890 Number of trees	1900
Arkansas,	2,114,706	7,486,145
Illinois,	6,949,336	13,430,006
Iowa,	3,640,588	6,869,588
Kansas,	6,063,343	11,848,070
Minnesota,	165,294	875,905
Missouri,	8,150,442	20,040,399
Nebraska,	1,283,367	3,877,329
Wisconsin,	1,383,070	2,557,265

BIOGRAPHICAL

8. DR. JOHN A. WARDER.

By W. H. Ragan, of Indiana.

In response to a request from the Assistant Secretary of this Society, I offer a brief reminiscence of the life and character of the late Dr. John A. Warder of Ohio. What I say of the subject of this sketch will be very largely in the nature of personal recollections of a man that none could know but to love and admire.

Dr. Warder's voice was hushed in death on July 14, 1883, now a little more than a score of years, yet his "good works" are still with us. Few men, if any, have contributed more, by precept and example to make that part of the world over which he fortunately exerted so wide an influence, better and nobler, for the life he lived. His good influence was especially valuable to the young whom he was sure to have about him, if they came within the magic circle of his presence. In such cases they were certain to find him and to cluster about him, for the good and encouraging things he was sure to have in store for them.

It was this great and good quality that so abounded in his makeup, that drew the writer to him on first sight. This was at the Indiana State Fair, in October, 1852. Of course the Doctor was then (as always, when it was possible for him to be so engaged) busy about the fruit tables, taking note of every new and interesting feature that might be found. To me, a timid country boy, he would offer a taste of the variety under consideration, taking great pains to direct my attention to the points of difference between it and some other sort, in which particular trait of character he so eminently excelled as a teacher. Certainly my early and intimate acquaintance with Dr. Warder, has had much to do with shaping my life career, for which I shall ever be grateful to his memory.

Dr. Warder was a horticulturist in the fullest sense, though pomology was his speciality. As a discriminating pomologist he was excelled by few if any of his day and generation. His American Pomology, published in 1867, still ranks first among treatises on the apple.

Hamilton County, Ohio (Cincinnati, or near that city), was Dr. Warder's adopted home. He found this new home in the West in 1837. He was born in Philadelphia, Pa., January 19, 1812, and was educated for the medical profession, in that city. His earlier years in Cincinnati were spent in the practice of his profession. But his natural taste for horticulture was an overruling one and soon led him out of his profession and into horticultural pursuits.

Recognizing as he did the great value of mutual associations as aids in educational matters he early gave his influence in favor of the organization of the Cincinnati Horticultural Society, which I think was affected in about 1843. If he was not at first elected its secretary, he certainly soon became such, and this placed him where he delighted to be, "in the harness," for any and all hard work that might be required of that officer. He was also one of the leading promoters of the Cincinnati Wine Growers' Association. In this association he was the co-worker of men like Nicholas Longworth, A. H. Ernst, Wm. Heaver, R. Buchanan, E. J. Hooper and others whose labors made Cincinnati for the time being a great grape growing center.

Dr. Warder's influence and acquaintance were greatly widened by his zeal in behalf of the organization of the Ohio State Pomological (now Horticultural)

Society, of which he soon became president, succeeding the late A. H. Ernst in about 1860, and remaining in that office by successive re-elections until removed by death. In the meantime, Dr. Warder was vigilant in encouraging organizations in other states. From 1852 until 1860, he never neglected an opportunity to encourage the organization of the State Society of Indiana. In October of the latter year his labors were crowned with success. This was a great pleasure to him as he generously testified at the time. One who was present at the meeting of the Indiana Horticultural Society in 1883, held in commemoration of Dr. Warder's death, truthfully said: "I do not believe this Society would be alive now but for him. Dr. Warder was always with us until we got in good working order. In view of this I think this Society should feel that he was its father." And similarly his personal influence spread over the other states of the Old West and ultimately of the whole country.

A quotation from a letter written to the president of the Indiana Horticultural Society, just prior to its fourth annual meeting, in which he expressed his regret at not being able to attend the same, will show his deep solicitude for its welfare, and that of the cause it espoused: "I will now address you in a few words of heartfelt sympathy with the labors you have undertaken to perform for the people of Indiana, and to a certain extent for the people of the West. In this matter we are all deeply interested in the work you are doing. Ohio sends her greetings to the people of the Hoosier State, and both unite in tribute to the pomologists of Illinois, Wisconsin and Iowa, who are actively engaged in similar pursuits with ourselves." Nor did he forget, in this same letter, to remind us Indianians of our dereliction of duty in the following kind admonition: "Congress has made a noble appropriation for the industrial education of our sons, requiring action by the State legislature. This action owing to unfortunate circumstances, has not been taken by the appropriate body in your State, but an extension of time has been granted, and it is to be hoped that the legislature of Indiana will now promptly accept the grant, for the purpose of furnishing an education adapted to the urgent wants of our industrial classes." This urgent appeal, doubtless had something to do in saving to our State the congressional land grant, which was already practically forfeited through neglect, on which grant the structure of our Purdue University rests.

In about 1853, Dr. Warder purchased a part of the Old Harrison homestead at North Bend, Ohio, a few miles below Cincinnati, where he resided during the remainder of his life. At this new home he found some beautiful Catalpa trees that seemed to differ from those he had before known. They were hardier and also more upright and beautiful in habit, and bloomed earlier and more profusely. These distinctions were sufficient to engage his earnest attention. On inquiry he learned that General Harrison had transplanted them from his former home at Vincennes, Indiana, on the lower Wabash, where the species is indigenous and where it was highly prized for its handsome tree, its beauty of wood, and its great durability for posts and other purposes. Dr. Warder's further investigations (he being a first-class, practical botanist), convinced him that it was a distinct species. To this he gave the appropriate name of "*Catalpa speciosa*," to distinguish it from *Catalpa bignonoides*, a less beautiful species, then well-known in cultivation. These facts were first published by him in the "*Western Horticultural Review*, of which he was editor and proprietor, in 1853.

Although a resident of a once densely forest clad region, Dr. Warder was one of the very first to sound the alarm, and to plead for the arrest of "The Woodman's axe" in its destruction of our native forests. He loved the forests because of their beauty, but he loved them more because he foresaw the great danger to ensue from their destruction. He did not live to see with the natural eye all that we have seen, in the way of disaster from this source, yet his warnings were never hushed while life remained.

Dr. Warder was the oldest son of Jeremiah and Ann Aston Warder. His early life was spent at "Woodside," his father's country home near Philadelphia. Bartram and Darlington were his near neighbors and as such were his early preceptors. Audubon, Michaux and Nuttall, were frequent and welcome guests at his father's house. From these he also received inspirations that were lifelong in their influences.

For four years, beginning with 1850, Dr. Warder published the *Western Horticultural Review*, a monthly magazine of first rank, devoted, as its name would indicate, to his favorite theme. He was also a contributor to many other journals and publications devoted to agriculture and the sciences. His essays, lectures and public addresses, would fill many volumes, and as before remarked, he was almost omnipresent at meetings devoted to horticulture and kindred arts. Perhaps no man of his day and generation ever attended more such meetings than did he. And he was the light and life of all. His contributions were always acceptable, entertaining, and instructive.

In 1873 Dr. Warder was United States Commissioner for the World's Fair at Vienna. In 1876 he was chosen, by Capt. Landreth, Chief of the Department of Agriculture, at the Centennial Exposition, as his assistant and adviser in matters pertaining to the exhibit. In this capacity Dr. Warder recommended, for superintendent of the pomological section, Col. G. B. Brackett, who was duly appointed, and to whom much of the credit of the exposition was doubtless due.

It is almost needless to say that, from the start, Dr. Warder was always foremost in promoting the welfare of this Society. For many years he was its Vice-President, and on more than one occasion he presided over its deliberations.

9. CALIFORNIA.

E. J. Wickson, Berkeley, Cal.

California respectfully asks for recognition from the American Pomological Society as a State which has contributed to the progress of pomology in America. Half a century ago there was no commercial fruit product and a little more than conjecture as to the suitability of the country for fruit growing except in a small way on the limited area then thought to be capable of irrigation. Early experiments were, however, strikingly successful, and within five years all the prophets were busy with the pomological future of California. Though their colors were bright they did not adequately picture the achievements which have been accomplished in the way of vast volumes of fruits and fruit products, and the distribution of them even to the other side of the world. The present standing of the California production is creditable to those who have labored for the promotion of this delightful industry. Bulletin 24 of the Division of Statistics of the United States Department of Agriculture by Mr. J. H. Blodgett (Washington, 1903) compiles figures largely from the census of 1900, which show that California leads in pears, producing more than the next two States combined; leads in peaches, plums and prunes, producing of each of these more than half of the whole product of the United States; produces nearly the whole national product of apricots, almonds and English walnuts; leads in grapes; far leads in citrus fruits and has practically the whole commercial product of figs and olives, while even in apples there are but ten States with greater products, and in cherries California stands next to the head of the list.

It is of immense satisfaction to California to have added so much to the pomological wealth of the United States, for the census of 1900 shows that of the total valuation attained by tree fruits, grapes and nuts, viz.: one hundred and eight millions of dollars, California produced twenty-eight million, eight hundred thousand or more than twenty-six per cent.

Aside from the commercial aspect there is satisfaction to Californians in the consciousness that in the mastery of the unique conditions with which they had to deal they have demonstrated the value of certain pomological methods and policies which may be helpful to fruit growers in other parts of the world. Among these may be named :

First, the importance of clean cultivation during the dry season in the conservation of rainfall and in promoting physical conditions in the soil which are favorable to vigorous root-action.

Second, the relation of cultivation to irrigation in the same respects.

Third, the rationality and profitability of providing irrigation as supplementary to rainfall and to act as a safeguard against occasional drought.

Fourth, the economic and cultural value of low-headed, well-framed fruit trees and the modification of pruning policies to produce such forms.

Fifth, the demonstration of several effective insecticides which are now coming in to wide use in other parts of the world, and the efficacy of the introduction and propagation of the natural enemies of destructive insects as a pomological policy.

Sixth, participation in an aggressive American policy to market fruit products abroad, and achievement on their own part in supplying American markets with certain fruits and fruit products previously available only through importation.

Seventh, signal success in the organization of fruit growers for coöperative action in preparation and marketing of their own products.

Eighth, achievements in plant breeding—chiefly those of Luther Burbank, which are conceded to be of world wide and permanent value.

Upon the basis of such accomplishments California asks to be enrolled among her sister States as one of those which have contributed to the progress of pomology.

10. PROGRESS OF SOUTHERN POMOLOGY DURING THE NINETEENTH CENTURY.

P. J. BERCKMANS, AUGUSTA, GA.

There are but few records of fruit-growing being attempted during the English, French and Spanish colonial period of the South, except with such material as existed there naturally, plums, mulberries, nuts and peaches being, however, mentioned by early writers. While the three first named fruits were indigenous to many sections, the peach was unquestionably first introduced in Florida and later in Louisiana by the early explorers, which included monks of various religious orders who in planting the cross of christianity planted also the seeds of fruit trees. To these early missionaries belong the credit of having been the first southern pomologists. Considerable intercourse existed between the Indian tribes of the South and through them were the seeds of peaches and apples disseminated. That peculiar type of peaches so well-known South as the Indian strain was undoubtedly first procured from the Florida Indians who gathered the seeds from trees originally planted by the Spanish monks. Apple seed, however, came mainly through the Creek, Choctaw and Cherokee tribes inhabiting the middle and upper sections of North and South Carolina, Georgia and Alabama, who secured these from tribes farther north or nearer the white settlements of Virginia. Many of our best southern apples and peaches can trace their origin to the trees originally grown from seed by these Indians.

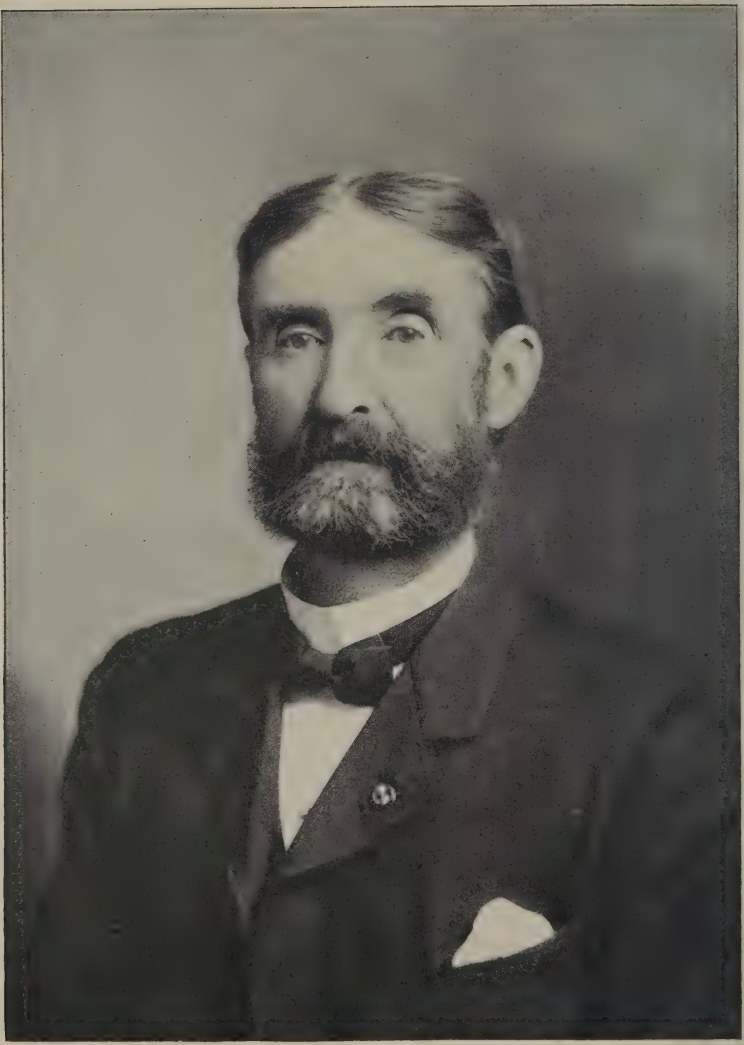
The introduction of the pear was of later date, the first records being from trees brought from England to Georgia and South Carolina, and from France to Louisiana. While some old apple trees, the remnants of the Indian orchards, are still found in the mountains of North and South Carolina, Georgia and Alabama, there seem to be no vestiges left of the earliest planted pear trees, or previous to 1830, when the cultivation of fruits may be said to have begun, and also the first writings upon pomology. A few small nurseries were started and to these we are indebted for many of our standard varieties of today. Transportation of trees being then very difficult, these early nurserymen had to depend upon collecting and propagating the best varieties of native origin. About 1845 transportation facilities becoming improved, fruit trees were imported from northern and European nurseries and soon after that date more extensive planting began but to be almost discontinued during the war between the States. On the return of peace it became evident that a greater diversity of products was necessary and having a precedent from the successful fruit shipments made north previous to 1860, commercial orchards were planted. A better understanding of the market demands brought about an improved system of cultivation, selection of varieties and especially in the methods of packing and handling fruit products. The previous primitive rule of planting orchards with seedling trees had to be abandoned because of the irregularity of the products as well as quality or period of maturity. From hundreds of varieties which constituted the material of the first orchard, the present fruit-grower has reduced his list to the smallest possible quantity. Many of the present large commercial orchards contain less than a dozen sorts, and some even eonfine the list to one or two.

Every year adds to the area of the southern peach orchards until today there are nearly 12,000,000 trees planted in Georgia and perhaps as many more in the other southern States. With the advent of the LeConte and Kieffer pears and the Japanese plums, additional material has been possible to the already vast area devoted to fruit culture. Small fruits form also a notable feature, as strawberries can now be safely carried to distant markets and their value is computed in favorable years up in the millions. Grape growing has made similar great strides and the varieties are now, like peaches and pears, reduced to a few standard commercial standbys. The mountain regions of the South produce apples of superior excellence. This is becoming recognized by many who have and are planting large orchards.

As an evidence of the progress of southern pomology, the market supply is its best example. Where twenty-five years ago fruit stores were unknown because of the inadequate supply of material, we find today in all our cities, as well as villages, an extensive and increasing trade. Fruit which once was considered as a luxury to our city people has now become a daily necessity, hence the rapid increase in their products.

Nut culture is on the increase ; and as to tropical fruits, one has only to see the enormous quantities of oranges, lemons, pineapples and other similar products with which the northern markets are now supplied to conceive of the vast area devoted to their cultivation as well as the increase in their quality.

Prof. Craig : I regret that the time limit is upon us and we must adjourn. We shall all keep in mind the fact that these addresses will appear in our Pro-



HON..C. L. WATROUS
Retiring President, to whom is due great credit for directing the society's efforts during the greater part of the past decade.

ceedings, and all members of the Society will look upon this volume as a valuable repository of historical data. I have the pleasure of returning the Chair to you, President Watrous.

Member : I want to say that I am especially glad I heard this paper of Col. Brackett's. I never knew before that we were indebted to our President for the introduction of the Russian apples into Iowa.

The President : I want to say that this young fellow did the best he knew how in those days and further that I have never been sorry for the introduction of Russian fruits, but I have been sorry for the way in which their value has been greatly exaggerated and their true status grossly misrepresented.

The Society then adjourned until Sept. 11, at 9:30 A. M.

FRIDAY MORNING SESSION.

September 11, 9.30 A. M.

President Watrous in the chair.

Dr. Hexamer as chairman of the committee on nominations asked Mr. Barnes of Kansas to read the list of nominees.

Mr. Barnes :

The following are the names of the persons nominated for the different offices:

REPORT ON NOMINATION OF OFFICERS FOR THE CURRENT BIENNIAL PERIOD.

President—J. H. Hale, South Glastonbury, Conn.
First Vice-President—Chas. W. Garfield, Grand Rapids, Mich.
Secretary—John Craig, Ithaca, N. Y.
Treasurer—L. R. Taft, Agricultural College, Mich.

STATE VICE-PRESIDENTS.

British Columbia	R. M. Palmer	Victoria, B. C.
California	Luther Burbank	Santa Rosa, Cal.
Colorado	W. S. Coburn	Paonia, Colo.
Connecticut	N. S. Platt	New Haven, Conn.
District of Columbia	G. B. Brackett	Washington, D. C.
Florida	G. L. Taber	Glen St. Mary, Fla.
Georgia	P. J. A. Berckmans, Jr.	Augusta, Ga.
Hawaii	Mr. J. C. Higgins	Honolulu.
Illinois	H. M. Dunlap	Savoy, Ill.
Indiana	James Troop	Lafayette, Ind.
Iowa	Chas. G. Patten	Charles City, Ia.
Kansas	Wm. H. Barnes	Topeka, Kans.
Louisiana	F. H. Burnette	Baton Rouge, La.
Maine	W. M. Munson	Orono, Me.
Manitoba	S. A. Bedford	Brandon, Manitoba.
Maryland	James S. Harris	Coleman, Md.
Massachusetts	J. W. Manning	Reading, Mass.
Michigan	C. J. Monroe	South Haven, Mich.
Minnesota	Wyman Elliott	Minneapolis, Minn.
Missouri	J. C. Evans	Harlem, Mo.
Nebraska	Geo. H. Marshall	Arlington, Neb.
Nevada	Ross Lewers	Franktown, Nev.
New Hampshire	C. C. Shaw	Milford, N. H.
New Jersey	I. J. Blackwell	Titusville, N. J.

New Mexico	Parker Earle	Roswell, N. M.
New York	F. M. Hexamer	52 Lafayette Pl., N. Y. C.
North Carolina	J. Van Lindley	Pomona, N. C.
North Dakota	C. B. Waldron	Fargo, N. D.
Northwest Territories	Augus Mackay	Indian Head.
Nova Scotia	R. W. Starr	Cornwallis, N. S.
Ohio	J. J. Harrison	Painesville, Ohio.
Oregon	E. L. Smith	Hood River, Oregon.
Ontario	A. H. Pettit	Grimsby, Canada.
Porto Rico	F. D. Gardner	San Juan, P. R.
Quebec	Norman E. Jack	Chateauguay Basin, P. Q.
Rhode Island	Jesse A. Carpenter	Cumberland, R. I.
South Carolina	Chas. U. Shepard	Summerville, S. C.
South Dakota	N. E. Hansen	Brookings, S. D.
Texas	T. V. Munson	Denison, Texas.
Vermont	T. L. Kinney	South Hero, Vt.
Virginia	Samuel B. Woods	Charlottesville, Va.
West Virginia	Fred E. Brooks	French Creek, W. Va.
Wisconsin	S. H. Marshall	Madison, Wis.
Wyoming	C. B. Buffum	Laramie, Wyo.

Dr. Hexamer: Before this is put to vote I would like to state that the nominating committee has given this matter careful consideration, and particularly in regard to the election of the president. It has been formerly considered that the presidency was a position for life. It is not because of any discredit or dissatisfaction that we changed the officer. As this is a national Society, it is right that the officers should change in this way. The first president was from New England; the second from the South; the third from the West; and now we come back again to old New England. In the case of the secretary, it was with great regret that the committee has not nominated Mr. Taylor again. It was his express and positive wish that he should not accept the position again. Only for that we would be glad to have him continue it. We greatly regret that Mr. Taylor feels it necessary to decline the office.

The President: I think we will all agree that the committee have acted wisely and well.

Upon motion, duly seconded, the report was accepted and adopted.

The Chairman of the committee on credentials then made the following report:

DELEGATES TO MEETING OF AMERICAN POMOLOGICAL SOCIETY, HORTICULTURAL HALL, BOSTON, MASS., SEPT. 10–12, 1903.

EASTERN NURSERYMEN'S ASSOCIATION.

Theodore J. Smith, Geneva, N. Y.; Howard Davis, Baltimore, Md.

INTERNATIONAL APPLE SHIPPERS' ASSOCIATION.

A. Warren Patch, 17 N. Market St., Boston, Mass.; F. D. Cummings, Portland, Me.

MISSISSIPPI VALLEY APPLE GROWERS' ASSOCIATION.

Hon. C. H. Williamson, Quincy, Ill.; I. D. Snedeker, Jerseyville, Ill.; Dr. J. R. Lambert, Coatsburg, Ill.

FLORIDA STATE HORTICULTURAL SOCIETY.

Professor H. Harold Hume, Lake City, Fla.

ILLINOIS STATE HORTICULTURAL SOCIETY.

W. S. Perrine, Centralia, Ill.

IOWA STATE HORTICULTURAL SOCIETY.

Wesley Greene, De Monies, Ia., A. T. Erwin, Ames, Ia.

GEORGIA STATE HORTICULTURAL SOCIETY.

P. J. Berckmans, Upper Mount Clair, N. J.

KANSAS STATE HORTICULTURAL SOCIETY.

Wm. H. Barnes, Topeka, Kansas.

MASSACHUSETTS HORTICULTURAL SOCIETY.

Pres. O. B. Hadwen, 60 Lovell St., Worcester, Mass. (Chairman); Wm. C. Strong, Waban, Mass.; Wm. H. Spooner, 484 Centre St., Jamaica Plain, Mass.; Hon. Joseph R. Leeson, 95 South St., Boston, Mass.; E. W. Wood, West Newton, Mass.; Gen. Francis H. Appleton, 251 Marlboro St., Boston, Mass.; Hon. Aaron Low, Hingham, Mass.; B. P. Ware, Clifton, Mass.; B. C. Clark, 55 Kilby St., Boston, Mass.; Charles F. Curtis, 493 Centre St., Jamaica Plain, Mass.; Wm. H. Elliott, Nonantum Hill, Brighton, Mass.; Col. Joseph H. Woodford, Wenham, Mass.; Col. Henry W. Wilson, 190 Dorchester St., South Boston, Mass.; Jacob W. Manning, Reading, Mass.; Prof. B. M. Watson, Bussey Institution, Jamaica Plain, Mass.; Charles W. Parker, 400 Washington St., Boston, Mass.; James H. Bowditch, 73 Tremont Bldg., rm. 902, Boston, Mass.; Warren Fenno, Revere, Mass.; J. Willard Hill, 93 Faneuil Hall Market, Boston, Mass.; Geo. F. Pierce, 400 Washington St., Boston, Mass.; John L. Bird, 122 East Cottage St., Dorchester, Mass.; F. W. Damon, 275 Broadway, Arlington, Mass.; Harlan P. Kelsey, 318 Tremont Bldg., Boston, Mass.; J. Woodward Manning, 1101 Tremont Bldg., Boston Mass.; J. K. M. L. Farquhar, 6 and 7 South Market St., Boston, Mass.

MINNESOTA STATE HORTICULTURAL SOCIETY.

Wyman Elliott, Minneapolis, Minn.; T. E. Perkins, Red Wing, Minn.

MISSOURI STATE HORTICULTURAL SOCIETY.

L. A. Goodman, 4000 Warwick Boulevard, Kansas City, Mo.; J. M. Irvine, St. Joseph, Mo.

NEW JERSEY STATE BOARD OF AGRICULTURE.

Franklin Dye, Trenton, N. J.; John M. Lippincott, Moorestown, N. J.

NEW JERSEY STATE HORTICULTURAL SOCIETY.

Charles Black, Hightstown, N. J.; Dr. J. B. Ward, Lyons Farms, N. J.; Wm. H. Reid, Tennent, N. J.

NEW YORK STATE FRUIT GROWERS' ASSOCIATION.

Prof. S. A. Beach, Geneva, N. Y.

WESTERN NEW YORK HORTICULTURAL SOCIETY.

Wm. C. Barry, Rochester, N. Y.; Jno. Charlton, Rochester, N. Y.

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NORTH CAROLINA STATE HORTICULTURAL SOCIETY.

J. Van Lindley, Pomona, N. C.; T. K. Bruner, Raleigh, N. C.; Moses H. Cone, Blowing Rock, N. C.; Dr. O. W. Blacknell, Kittrell, N. C.; Geo. N. Ives, Newbern, N. C.

OHIO STATE HORTICULTURAL SOCIETY.

E. M. Woodard, Kirtland, Ohio; W. R. Lazenby, Columbus, Ohio.

RHODE ISLAND HORTICULTURAL SOCIETY.

Mr. Marcus M. Burdick, Providence, R. I.; Hon. Silas H. Manchester, Providence, R. I.; Hon. Geo. N. Bliss, East Providence, R. I.; Mr. E. H. Burlingame, Providence, R. I.; Prof. Fred W. Card, Kingston, R. I.; Mr. C. W. Smith, Providence, R. I.; Mr. Jesse E. Carpenter, Abbott Run, R. I.; Mr. John G. Massie, Providence, R. I.; Mr. Joseph D. Fitts, Providence, R. I.

SOUTH CAROLINA HORTICULTURAL SOCIETY.

Col. R. B. Watson, Ridge Spring, S. C.; Prof. Chas. E. Chambliss, Clemson College, S. C.

VERMONT HORTICULTURAL SOCIETY.

.Mr. Geo. H. Terrill, Morrisville, Vt.; Prof. Wm. Stuart, Burlington, Vt. T. L. Kinney, South Hero, Vt.; A. A. Halladay, Bellows Falls, Vt.

VIRGINIA STATE HORTICULTURAL SOCIETY.

Hon. Geo. E. Murrell, Fontella, Va.; Hon. S. L. Lupton, Winchester, Va.; Hon. A. M. Bowman, Salem, Va.; Hon. Wm. H. Boaz, Covesville, Va.; Hon. Samuel B. Woods, Charlottesville, Va.; Prof. J. L. Phillips, Blacksburg, Va.; Dr. J. R. Guerrant, Roanoke, Va.; Mr. Walter Whately, Crozet, Va.; Mr. W. W. Otey, Draper, Va.; Dr. J. B. Emerson, 20 East 30th St., New York, N. Y.; Hon. J. Thompson Brown, Briarfield, Va.

WEST VIRGINIA STATE HORTICULTURAL SOCIETY.

S. W. Moore, Elwell ; Guy L. Stewart, Parkersburg ; Fred W. Brooks, French Creek ; H. W. Miller, Paw Paw ; G. P. Miller , Paw Paw ; Prof. S. W. Fletcher, Morgantown.

NEW HAMPSHIRE HORTICULTURAL SOCIETY.

Mr. C. C. Shaw, Milford, N. H.; W. D. Baker, Quincy, N. H.; Prof. F. Wm. Rane, Durham, N. H.; John A. Paulson, Quincy, N. H.; John T. Harvey, Pittsfield, N. H.; C. S. Abbott.

ONTARIO FRUIT GROWERS' ASSOCIATION.

R. B. Whyte, Ottawa, Canada ; W. T. Macoun, Ottawa, Canada.

QUEBEC POMOLOGICAL SOCIETY.

Wm. Craig, Jr., Abbottsford, P. Q.; N. E. Jack, Chateauguay Basin, P. Q.

NOVA SCOTIA FRUIT GROWERS' ASSOCIATION.

R. W. Starr, Wolfville, N. S.; A. C. Starr, Port Williams, N. S.; F. C. Sears, Wolfville, N. S.

HORTICULTURAL SOCIETY OF NEW YORK.

Leonard Barron, Secretary, 136 Liberty St., New York ; Dr. F. M. Hexamer, 52 Lafayette Place, New York.

MICHIGAN STATE HORTICULTURAL SOCIETY.

Chas. W. Garfield, Grand Rapids, Mich.; Prof. L. R. Taft, Agri. College, Mich.; Prof. U. P. Hedrich, Agri. College, Mich.

UNIVERSITY OF MAINE.

Prof. W. M. Munson, Orono, Me.

MAINE POMOLOGICAL SOCIETY.

Z. A. Gilbert, North Greene, Me., President; D. H. Knowlton, Farmington, Me., Secretary; C. A. Arnold, Arnold, Me.; V. P. De Costa, Buckfield, Me.

GRAND RIVER VALLEY HORTICULTURAL SOCIETY.

Chas. W. Garfield, Grand Rapids, Mich.

CONNECTICUT POMOLOGICAL SOCIETY.

Prof. A. G. Gulley, Storrs, Conn.; H. C. C. Miles, Milford, Conn.; R. A. Moore, Kensington, Conn.; J. H. Hale, So. Glastonbury, Conn.; J. H. Merriman, Southington, Conn.; N. S. Platt, New Haven, Conn.; E. M. Ives, Meriden, Conn.; Orrin Gilbert, Middletown, Conn.; J. H. Putnam, Litchfield, Conn.; Geo. W. Smith, Harford (Box 38), Conn.

WORCESTER COUNTY HORTICULTURAL SOCIETY.

Burton N. Gates, Worcester, Mass.; George Cruickshanks, Fitchburg, Mass. Prof. C. F. Hodge, Worcester, Mass.

MASSACHUSETTS AGRICULTURAL COLLEGE.

Prof. F. A. Waugh, Amherst, Mass.

CORNELL UNIVERSITY COLLEGE OF AGRICULTURE.

Director L. H. Bailey, Ithaca, N. Y.; Professor John Craig, Ithaca, N. Y.

Report accepted.

The President: Where is Mr. Hale? Will Mr. Hale come forward?

I am very glad to turn over the work of the Society into such capable hands, Mr. President.

Mr. Hale: Mr. President: brothers and sisters of the American Pomological Society; you have taken me utterly by surprise. I was given one little hint yesterday that my name had been mentioned in connection with this high office, but not for a moment did I dream that such a thing could be in many of your minds. I am overwhelmed by this honor. So much so that I certainly cannot express in words my feelings. It seems to me that you cannot have thought wisely and well when you choose to elect to the chair, that has been filled by a Wilder, a Berckmans, and a Watrous, one who has had so little experience in the general field of pomology as myself. My work in pomology has been only in one or two narrowly specialized lines and I am lacking in scientific attainments and in the broader field of pomology, and therefore I feel utterly unworthy to hold the position. Yet I feel so highly complimented by the unanimous expression of confidence that I cannot fail to accept it, and without taking any more of your time will simply say what my mother taught me in the early days when I received anything that I appreciated—I thank you.

I wish to ask ex-President Watrous to preside during the entire Sessions of this convention and at the next gathering of the Society I will try, with the help of the excellent set of assistants you have given me, to plan and carry out a meeting that while departing possibly somewhat from the old time dignity and moderation of our assembly, will contain features of interest to every branch of the profession. Scientist, amateur or commercial fruit grower all shall be urged to come and join in our deliberations.

Mr. Watrous : I have been a soldier at one time in my life, and I have always tried to serve in whatever place I found myself, and I will serve you to the best of my ability during the rest of this meeting.

Now we have here the report of the *Ad Interim* Committee on the Examination of New Fruits.

Dr. Hexamer : Mr. President, ladies and gentlemen : It will not be necessary to read all the various preliminaries as this was done yesterday by the chairman of the executive committee—how this was organized and what work has been done by the executive committee. Now the committee itself has received thirty-three entries of new fruit. If you desire I will read it, but I hardly think it is necessary.

REPORT ON ENTRIES OF NEW FRUITS FOR *AD INTERIM* EXAMINATION.

Apr. 6, 1903, to Sept. 1, 1903.

Under the plan for *ad interim* examination as announced by the Executive Committee Apr. 6, 1903, the following entries of new varieties have been filed with the Secretary :

FOR SUB-COMMITTEE ON POME FRUITS—FIVE ENTRIES.

J. W. Griesemer, Hopedale, Il ., "Matthews" pear ; specimens about Nov. 1, 1903.

Jules Lagace, Rivier du Loup, Quebec, one variety of apple ; specimens in September, 1903.

F. W. Kiesling, Box 1002, Spokane, Washington, one variety of apple ; specimens in September or October, 1903.

U. T. Cox, Rockwood, Ohio, one variety of apple ; specimens in October, 1903.

E. P. Powell, Clinton, N. Y., one variety of apple.

FOR SUB-COMMITTEE ON STONE FRUITS—EIGHT ENTRIES.

E. W. Kirkpatrick, Mc Kinney, Texas, three varieties peaches ; specimens about June 1, 1903.

R. A. Hiley, Fort Valley, Ga., "Hiley" peach ; specimens about July 1, 1903. [Recommended for a silver medal. *Sec'y.*]

R. G. Chase Co., Geneva, N. Y., "Miner Wonder" peach ; specimens about September 1, 1903.

Christian Steinman, Mapleton, Iowa, one variety of plum ; specimens in August, 1903.

U. T. Cox, Rockwood, Ohio, one variety of plum, early October, 1903.

H. H. Cummins, Cleo, Okahoma, one variety of "Sand cherry ;" specimens about July 15, 1903.

FOR SUB-COMMITTEE ON GRAPES—TWELVE ENTRIES.

Matthew Crawford, Cuyahoga Falls, Ohio, "Regal ;" specimens about October 1, 1903.

E. P. Powell, Clinton, N. Y., "Several varieties grapes."

Allen L. Wood, Rochester, N. Y., "McKinley" grape ; specimens in September, 1903.

T. V. Munson, Denison, Texas, "Headlight" grape ; specimens July, 1903; "Amethyst" grape ; specimens August, 1903 ; "R. W. Munson" grape ; specimens August, 1903; "Xlenta" grape; specimens August, 1903; "Sheruah" grape; specimens August, 1903; "Manito" grape; specimens August, 1903; "Cloeta" grape; specimens August, 1903; "Blondin" grape; specimens August, 1903; "Ben Hur" grape; specimens August, 1903.

FOR SUB-COMMITTEE ON MISCELLANEOUS AND SMALL FRUITS—FIVE ENTRIES.

Chas. A. Green, Rochester, N. Y., unnamed strawberry; specimens about June 15, 1903.

Julius Schnadelbach, Grand Bay, Ala., unnamed strawberry; specimens about May 15, 1903.

George J. Streator, Garrettsville, Ohio, "Cardinal" strawberry; specimens about June 1, 1903.

E. P. Powell, Clinton, N. Y., 1 seedling currant.

Chas. G. Hooker, Rochester, N. Y., "Perfection" currant; specimens about July 5.

FOR SUB-COMMITTEE ON CITRUS FRUITS—NO ENTRIES.

FOR SUB-COMMITTEE ON TROPICAL AND SUB-TROPICAL FRUITS—TWO ENTRIES.

C. P. Taft, Orange, California, "Advance" loquat; specimens about May 1, 1903. "Premier" loquat; specimens about May 1, 1903.

FOR SUB-COMMITTEE ON NUTS—FOUR ENTRIES.

Theodore Bechtel, Ocean Springs, Miss., "Success" pecan; specimens about Nov. 1, 1903.

Mrs. C. W. Jacocks, Formosa, Fla., "Jacocks Perfection" pecan.

John Rock, Niles, California, "Jordan" almond; specimens about September, 1903.

J. G. Rush, West Willow, Pa., "Hybrid Chinquapin;" specimens about September, 1903.

Report adopted.

Chairman: Now we will do our best to get through with the morning's work. And first we have a paper from our president Mr. J. H. Hale, South Glastonbury, Conn., entitled "Grading and Packing Fruits for Long Shipment."

HANDLING FRUIT

I. GRADING AND PACKING FRUITS FOR DISTANT SHIPMENT.

J. H. HALE, SOUTH GLASTONBURY.

I realized that to bring a plain fruit grower like myself onto the platform where so many scientific men have been discussing our fruit problems would leave me in an unhappy position, but I am here. I am like the gentleman whose wife was dying. She said, "John, I know I am going to leave you, but I am going to ask you one thing,—at the funeral, will you promise me you will ride in the carriage with my mother?" He said, "Yes, Mary, I will do it, but it will spoil the pleasure of the day for me." And so, for a plain Mr. to talk to you where so many professors have been talking destroys all the pleasure of the day for me, I feel so out of place.

I remember in my boyhood days attending the meeting of the American Pomological Society and there were a whole lot of plain, every-day Misters. I remember Mr. C. M. Hovey, Mr. W. C. Strong, who is here with us now, Mr. T. S. Gold and P. M. Augur from Connecticut, Mr. Edmund Williams and Mr. William Parry from New Jersey, Mr. Thomas Meehan of Philadelphia, Mr. P. J. Berckmans from Georgia, Mr. Patrick Barry from New York, Mr. Parker Earle from Illinois, Mr. Nick Ohmer from Ohio, a man by the name of Mr. Wilder from Boston, Mr. Charles Downing and Mr. John Thomas from New York, Mr. T. T. Lyon of Michigan and a whole lot of Misters, but they are all gone now and the programme is filled up with professors. Is the Pomological Society running us up or down hill? I don't know where it is going to end, but I do know that scientific fruit growing is making rapid strides and that it is only by working hand in hand one with the other that our greatest progress can be made and I for one would not think of trying to get along without our professional friends.

The subject I am going to speak on this morning goes way back into the fields. Fruit for long distance shipment must be *grown* for long distance shipment, and with the great development in our railroad lines for transportation, and the development in the refrigerator car, there isn't any more local marketing of fruit, or else no fruit at all. If there is a failure in one section of the country one year, we call upon another section for fruit, even the most distant points can be supplied, or if there is a shortage here or if the season is not on there, fruit may be shipped to either place. The peach season begins very early in the extreme south, late in April or early May, and runs over a period of five months before it ends in the extreme north or in the mountain regions of Virginia; the strawberry season covers nearly seven months in the United States and Canada today, and it is necessary to use greater care in the selection of soil and varieties of fruit, than ever before. Fruit for long distance shipment should be grown on high land where there is good air and water drainage and it must be ripe when picked. On some flat level lands, we may grow fruit that we do ship long distances, but the fruit that is best to carry and shows up best in the market is that grown on high, well-drained land. Also, it should be grown on an open tree with an opportunity for air and sunlight to get in so as to make the fruit of the firmest texture and brightest colors. Where the land is not well supplied naturally, a liberal application of potash gives the fruit a better carrying quality than where there is a lack of it.

In the harvesting of this fruit for market, we find that well matured fruit on the tree if rightly handled will carry better than immature fruits. Take for instance a peach, a well matured peach, that is fully grown, not soft, but at its highest state of perfection. It is in the best condition for harvesting and for long distance shipment provided it is then taken carefully from the tree by a careful man, and put into some rigid package. One of the essentials of long distance shipment of fruit is care in picking and packing. See that it is picked and packed in boxes or something that is rigid. I see more or less of elastic packages used especially in picking, and it must be expected when you set such a package down that it will crush up and the fruit be bruised. By being handled in a package that has no elasticity whatever you avoid this. One of the essentials, therefore, is to have a rigid package to pick it into, something that is similar in style of firmness to an ordinary wooden bucket. If you could pick it into a rigid wooden bucket that would be one of the best styles of package so far as handling the fruit is concerned. But there are one-half bushel baskets made that are smooth on the inside and they do very well. The best picking basket now on the market is what is known as the "Oak Stave one-half bushel drop handle basket." Then it is necessary to get the fruit quickly from the tree into a cool and convenient packing house, and you cannot do it any too quickly. There it wants to be graded by hand, not *de*graded by a machine, into the various styles and forms in which you have decided to pack it. I find that it is never wise or safe to have the people who are packing the fruit grade it. There should be a separate lot of people to grade it, because if it is graded by the same packers from the picking basket into the shipping package they are liable to select just the right size fruit that will fit into a certain place. The most conscientious packer you have will look for an apple, peach or plum or a pear that will fit a special place. So that grading should first be done by careful people who have quick and nimble fingers and a delicate touch, and graded into some sort of a tray that may be devised of cloth or canvas of some kind.

In our Georgia packing houses we have long tables four and one-half feet to six feet wide; the canvas trays elevated about a foot run down the center of this table; the ones who grade the fruit stand on one side, and the packers stand on the other.

Just what shipping package you use depends upon the kind of fruit you are handling and the market you wish to reach, but the best known package for peaches and plums is the Georgia six-basket carrier, while for the apple and pear the bushel box or 50 lb. box is the package most acceptable for choice fruit. The package needs to be rigid, strong, well nailed together and as light as possible, because the cost of the lumber and the cost of the transportation of the same is quite a considerable item. The majority of fruit shipped long distances in America is shipped in unwrapped condition. Although I think it is possible to put fruit in good condition on the market without a paper wrapper, I think the time is coming when the members of this Pomological Society will see that all the choice specimens of apples, peaches, pears and plums put on the market will all be paper wrapped. That adds to the expense and labor, but it also adds to the carrying qualities of the fruit and the keeping qualities of it, and the consumer will pay for it in the end, and pay liberally and well.

I had an experience in Georgia the past season in shipping a particular lot of Belle of Georgia peaches. We had a great foliage and only a moderate crop of fruit. The last of our harvesting was from the inside of the tree. The color of the fruit was greenish white with just a tint of blush. They were a little too good to send to the cannery and I thought too poor in color to send to the market. To use up some surplus paper we had, we wrapped some fifty or seventy-five crates of these peaches and shipped them on to New York in car with other and better fruit. They arrived a little too late for the Saturday morning market, therefore they were held over until Monday. Monday morning was rainy and our agent decided not to put them on the market. Tuesday morning something else happened, and I think it was Thursday before the car was opened and the fruit brought out. The fruit was nine days from the tree. I happened to be in New York at the time and helped unpack and saw the fruit. Seventy-five per cent. of those peaches had a good rosy cheek on them and not over five per cent. were decayed. Picked and packed on a warm day the paper wrapping had brought out a fine color, and they brought as high a price as any of the peaches that season, while a few crates of the same peaches unwrapped, in the same car, had more than seventy-five per cent. decayed, and what were left were way off in color. So that the paper wrapping helps to keep the fruit, helps to bring out the color, and makes a salable price that is from 10 to 25 per cent. over the average price of the market. In all these things we want to consider that the one who consumes the fruit pays all the bills. Many of our fruit growers lose sight of this. Let me just tread on this ground a moment longer to say that we may grow inferior qualities of fruit if we will, just because it yields well and looks well, but we always want to consider who finally pays the bill for the cultivation, for the package, the labor and expense of handling and the commission. It must all come out of the consumer. And unless we can in the long run give something to the consumer that is worth his money we cannot continue to get that money. Therefore the man who is producing the best quality of fruit is going to get the best satisfaction. And to me the greatest pleasure is in giving people something that is worth their money. And in the long run I will get more of their money than I could with good looking but inferior flavored fruit.

The fruit after it is carefully picked and is tightly packed in whatever package may be used, should be packed by hand just as full as you can get the package, nailed up as quickly as possible, and then put immediately into a refrigerating car or into cold storage ; leaving the fruit out for a few hours or a day or several days as they do with the apple is a serious menace to its keeping and shipping value. Get it into the package or cold storage house just as quickly as it is possible to do it and you cannot do it too soon. I believe Prof. Powell touched on that point yesterday and I know the Department at Washington has made some recent very thorough investigations along that line. It is of very great importance to handle fruits for long shipment and to get it into cold storage just as quick as it can be done and a little quicker if possible.

There is a method of bringing out high color and shipping qualities in fruit I have found from some experiments last year with the early Rivers Peach, which was one of our best qualities, but very subject to monilia, or brown rot. About two weeks before the ripening, we stripped off half the foliage of the trees and the peaches were remarkable for a thickness of skin and a firmness of texture. They were a splendid shipping quality, and would carry a long distance, and were almost as highly colored as Mt. Rose, but they were not as good to eat as if we left all the foliage on. If you strip off half the foliage it will give a thichness and firmness of skin that will help to carry, but it will leave it inferior in quality. Yet this is a point of value in very tender varieties of peaches.

These are the main points in treating fruit for long distance shipments, and I think if I were to emphasize any it would be to always let the fruit get fully grown. Yet not to have reached the eating stage. Some people have the idea that if fruit is picked in an immature condition it will arrive in better shape. It is not so. Thoroughly matured fruit is the best to ship provided it is handled quickly and properly all the way through, after it is once taken from the trees.

II. FRUIT INSPECTION AND EXPORT TRADE.

W. A. MacKinnon, Ottawa, Can.

Mr. Chairman, ladies and gentlemen: I want first of all to put myself right with you by getting into Mr. Hale's class, and disclaiming the title which precedes my name on the program. I am one of the plain "Misters" of whom we heard this morning and the "Honourable" title has been conferred by your Secretary out of the goodness of his heart.

I desire on behalf of the Minister of Agriculture for Canada to thank your Society for the invitation extended by your Secretary to have the Ottawa Fruit Division represented here. It is a particularly busy season of the year with us, both in our inspection and in our educational work, a good deal of which is done at the fall fairs in Canada. At first the Minister was inclined to think that he could not spare any of our staff at this season but most of our societies in Canada have obtained information from members of the Pomological Society, and our Minister and the officers of the Department are desirous that this friendly intercourse should continue; what we can learn we shall be glad to learn, and what we can offer for your benefit we are willing to offer.

I shall now take up my subject, which will not perhaps interest everyone here. I should like to lay before you in a few words some facts in regard to "Fruit Inspection and the Export Trade" in Canada. We have found that the crime of fraudulent packing and marking of fruit is like the horizon—you always hear of it and perhaps get a distant view of it, but you are never where it is; nor can you ever say: "Here in this place, the crime is committed."

The disease, which has had among its many results my presence with you today, may be described as the desire to outstrip competitors in the race for fruit trade profits. Some would say it is, or was, the wish to deceive the public and to fleece the buyer; others explain the trouble euphemistically as owing merely to the natural tendency to put the best foot forward and make a brave show,—in this case by giving every package of fruit an attractive face. Take what view we may of the cause, diagnosis of this malady is easy. It manifests itself in the secreting of inferior fruit in the middle of packages, and in the marking of all grades as "No. 1" or better. I incline to the opinion that over-zealous competition was to blame, for the under-scrupulous shipper endeavored to have as large a share as possible of the high priced trade in first quality fruit; he was tempted to increase his output of this grade by inserting a few quarts of inferior fruit in each barrel marked "No. 1," and when by degrees he found himself taking a little water in a glass of whiskey instead of a little whiskey in a glass of water,—in other words, when the inferior apples outnumbered the good ones by four to one—he forgot to change the grade mark and the relative positions of the fruit. The package was still "No. 1" and still wore a rosy, smiling "face."

But the public and especially the British buyers could not long be misled; a few sales at good prices and they became shy of Mr. Blank, whose marking and packing were so deceptive. Good! Mr. Blank modestly withdrew and was heard of no more, but a new shipper appeared—a Mr. Cipher, whose first consignments were found honest in every way, and who soon had a reputation, on the strength of which he was able to fleece the buyers once more. The name was changed as often as necessary; that was all. And what of the honest competitor? He was doing well on his small proportion of "No. 1" fruit, but human nature could not stand the strain of seeing double profits made out of the same quantity of fruit and he was soon forced, in self-defence, as he says, and really against his will, to adopt the same tactics, which came in time to be considered the approved system of the trade. Against this evil, good counsel was powerless.

You all know the story of the temperance reformer, who began to quote statistics for the western state where he was lecturing. His first figures showed that within three years, 89 sober and well conducted citizens had been done to death by 70 intoxicated men. After that his whole lecture was useless, for he had demonstrated how dangerous it was to be sober in that particular state. Just so with the apple shipper when would-be reformers pointed out how the evil doers were making profits at the expense of the public, and incidentally of their competitors. The example was contagious and irresistible.

What was the result? A demoralized market in which second grade fruit often sold for more than "No. 1," if it was uniform, and in which no honest shipper's reputation was good enough to ensure him the confidence of buyers, and the prices his stock really merited. There was also an all-round depreciation in prices paid for fruit from the countries where fraudulent practices prevailed, a general discrediting of all other products from the same tainted source and finally a more or less widespread contempt for the men and the nations, among whom business integrity was so lightly esteemed.

At every fruit growers' and apple shippers' meeting, the evil was deplored, but no improvement resulted and legislation was finally asked for by fruit growers' associations throughout the country. The Minister of Agriculture being appealed to, gave the matter long and careful consideration and at last, after hearing all parties concerned, introduced a bill in 1900, which was discussed in the House and in the country and finally passed, with a few amendments, as the Fruit Marks Act of 1901.

This Act puts an end to the use of fictitious brands, by requiring the name and address of the responsible shipper to be placed on every closed package. Closed packages must also bear a distinct grade mark, "No. 1 or XXX," "No. 2 or XX." "No. 3 or X," and the public is safeguarded by the fixing of a standard for the first grade as follows:

"Such fruit must consist of well grown specimens of one variety, sound, of nearly uniform size, of normal shape, of good color for the variety and not less than 90 per cent. free from scab, worm holes, bruises and other defects, and properly packed."

Then follows a most important provision against over-facing, which makes it an offence to pack or sell any package of fruit, more than 15 per cent. of which is substantially inferior to the shown surface. This then was the remedy proposed. How was it to be administered?

The machinery consists of a staff of inspectors, some traveling, some stationed at the ports of export and all endowed with large powers, as defined by the Act. They are authorized to enter any premises at any time to examine fruit which they may have reason to think may be falsely marked or packed. In addition, they are empowered to stamp any packages "falsely marked," or "falsely packed," according as they may find it. It is important to observe that no inspector is authorized to stamp any package which he has not personally examined, even if it be the last barrel in a car, every one of which had turned out to be improperly marked or dishonestly packed. I emphasize this point because there is in some quarters a misunderstanding regarding the scope of the Fruit Marks Act. An examination of 10 per cent. of a carload might be sufficient to determine the grade of the fruit, for the purpose of buying or selling, but it is not sufficient to enable an inspector either to brand a package as "falsely marked," or to pass it as honestly graded, if he has not seen the contents.

Inspectors are liable to a penalty, not exceeding $50, in case they exceed their powers, as for example—by unnecessarily detaining a shipment of fruit, and thus causing it to miss a train or steamer.

Regarding the methods of inspection, it may be said that these vary as much as possible and are often determined by circumstances. As a general rule, but few packages of a brand which previous examinations have shown to be reliable, are opened or disturbed by the inspector; whereas, a brand which has previously been found dishonest, is subject to a rigid examination. In case the first packages opened are found faulty, it is the inspector's duty to continue his examination until the entire shipment has been inspected, unless the owner or his agent voluntarily reduces the grade mark so as to bring it within the requirements of the Act. In the case of false packing, nothing short of re-packing will meet the requirements of the law, and such re-packing does not excuse the shipper from the penalties attaching to the original dishonest work. A guiding principle throughout the inspection work is that the trade shall be disturbed as little as possible. It was, therefore, the practice during the first two seasons of the operation of the Act, to make its administration mainly educational. Shippers were written to once or oftener, advising them as to which of the provisions of the Act their shipments had violated, and they were informed how they might comply with the law. Only in case of persistent infractions, or glaring and systematic attempts at fraud, were prosecutions entered upon. Now, however, that the trade is thoroughly familiar with the law, the lines are being drawn closer, and the inspectors and the public generally are coöperating to strictly enforce the law.

The results of this policy have been unexpectedly gratifying. I was informed on many occasions by members of the British trade that a wonderful change had come over the methods of Canadian shippers. Many of these gentlemen located in the midland towns of Great Britain, had no knowledge that any legislation had been enacted, As one of them put it, "there must be some new idea out there, I don't know what it is."

Briefly, the result has been to place Canadian fruit in a most favorable position on the British markets. Confidence is being gradually but surely restored and with reliability and simplicity of marking and honesty of packing, the export fruit trade from Canada is rapidly assuming the position that was long occupied by other branches of our commerce. There is in fact, no inherent reason why one should not be able to order a given number of packages of a certain grade and variety of fruit with as much confidence and certainty as he would order a certain number of bales of cotton or bars of steel.

After all due credit has been given to the legislator who passed the Fruit Marks Act, for wisdom and moderation in preparing its terms, and to the staff of inspectors for similar discretion in administering the Act, it must still be admitted that the great strength of this, as of all other legislation, lies in the moral support of the public. Of this, indeed, the Minister of Agriculture was assured before he consented to place this Act upon the Statute books. Without the support of public opinion, absolutely no progress could have been made. More than that we have had the support and sympathy of more than nine-tenths of those engaged in the trade, either as growers, dealers or shippers. It will be remembered that the growers were the first to ask for legislation in self-defense. As has already been stated, the great majority of fruit men, like men in other walks of life, are honest at heart. They, therefore, welcome the relief which the Fruit Marks Act brought them from what had seemed to them the necessity of adopting unfair methods forced upon them by competitors, in order to live.

I have dealt so far with the export trade only and would say in conclusion that this trade has benefited wonderfully by the operation of the Act, and that there is today hardly anyone connected with it, who would consent to its repeal. Many large lots of fruit are never examined, and some would like the inspection to be much more complete and rigid than it is. The intention of the Act, however, was that it should be preventive in its operation and the knowledge that any package of fruit may at any time be examined, either at the point of shipment or at the port of export, is counted upon to act as a deterrant to the few dishonest shippers who may still exist. Equally satisfactory have been the results in the domestic trade.

DISCUSSION.

Mr. Hale: Do I understand that X is synonomous with "No. 3?"

Mr. MacKinnon: Yes, with No. 3.

Q. Don't more use X than they do No. 3?

A. I am glad to say that there is very little No. 3 fruit exported; in Nova Scotia the mark "No. 2" is freely used. In Ontario the "XX" mark is used much more commonly than "No. 2," which results from a misapprehension of the understanding of the buyers, because it might just as well be marked "No. 2" as with an Arabic sign or any other hieroglyphic. If it is marked "XX" it means No. 2, and the buyers are well aware of the fact. It doesn't hurt the sale of the fruit in the least to mark it in plain English "No. 2."

Mr. Hale: Doesn't that refer to the consumer?

A. The consumers in the Old Country purchase the fruit by the pound without relation to the original package and never see the barrel with its grade marks.

A member: What do you do with the large size apples?

A. They are best packed in boxes. For "No. 1" fruit nearly uniform sizes are required by the Act, but the inspectors are instructed to reject only such fruit as is properly described as "small for the variety." There is no size in inches specified by the Act.

A member: What about the Baldwin?

A. No size is specified. If the inspector thought the fruit was too small to be "No. 1" he would bring it to the notice of the other inspectors, if present, and the inspectors among them would probably settle the question. That question has never come up in court for the reason that the inspectors find no serious fault with any well grown fruit that is found in good condition.

Q. Would the inspector open a barrel and turn it out? How does he inspect a barrel of apples, please?

A. His methods are as varied as possible. No one knows how he is going to examine it. He may turn out the entire barrel, in fact that is always done when overfacing is suspected. Then he may take out a stave of the next barrel, or go down deep and make a cone-shaped opening in either end of the next barrel. He varies his methods as much as possible.

Ex-Sec. Taylor: Is there a provision for any reimbursement for a shipment that should be detained?

A. Not at all. If it is detained for a good cause, as where the inspector finds a number of packages improperly marked or over-faced, he will be justified in detaining the shipment. Whose fault is it that it is detained? The shipper's only, and it is thought by our Parliament that if a man has a fraudulent lot of fruit waiting for shipment, it is a good thing if that fruit doesn't get forward readily.

Mr. F. D. Cummings of Portland, Maine: I should like very much to hear an expression of opinion upon the address that our neighbor, Mr. MacKinnon, has given us. I think that we would be very unwise if we did not discuss that. For one I am very glad to see him here and to hear what he has said. Anybody who either grows or plants or buys apples in the United States knows that the grading of that fruit is not what it ought to be. I will be very glad if that matter can be regulated by common-sense and business methods, but I am sorry to say that I don't think it can be, and I believe that the fault, be whose it is, we need not discuss that,—whether it is the fault of the grower, the packer, the shipper,—the fault is there, and it is to the interest of the whole trade, it is for the interest of the man who grows the fruit, for the man who buys it and for the man who consumes it, that fruit should be properly graded and that the grade should be designated properly and that it should not be either fraudulently packed or poorly packed. I have had about twenty years' experience in the export trade and I speak from personal experience. I have handled apples and I would be very glad indeed to see the states,—each state separately of course,—we would have to do it that way, —pass a law establishing and defining grades for apples, defining what a No. 1 apple should be, and what a No. 2 apple should be, and authorizing the towns and cities to appoint inspectors and I would suggest, though that perhaps is immaterial, that it would be under the fee system. Inspectors should be called and should be paid an established fee for their work, and their travelling expenses, and that a party against whom the decision is made should pay the bill. It does not seem to me a very difficult matter, and really I do not see why anyone should object to it. I do not see why everyone should not be in favor of it, because it would be an advantage and a distinct advantage to everyone in the trade. I would not favor a law that was not just and fair. It is just and fair, and it can possibly be made as clear and explicit in defining the grades.

I would offer the following as the outline of an act that if put in force would in my opinion prove relatively efficient:

AN ACT TO REGULATE THE GRADING AND BRANDING OF APPLES.

(A SUGGESTION.)

All apples bought or sold in the State of Massachusetts as number one or number two apples shall be graded and branded as follows: to wit,—Number one apples shall be not less than two and one-half inches in diameter, shall be sound, smooth, clean, free from worms, worm-holes, bruises, injuries and disease.

Number two apples shall be not less than two inches in diameter when smooth and free from worms, worm-holes and disease, and not less that two and one-half inches in diameter if it has a worm-hole in it and is free from the other defects which would exclude it. All apples bought or sold as number one apples shall be branded as such upon the face end of the package, and all apples bought or sold as number two apples shall be branded as such upon the face end of the package.*

An inspector or inspectors shall be appointed by the authorities of the several towns and cities in the State under a fee system, to serve as inspectors when called upon, the party against whom the decision is made paying the fee. The inspector called may be an appointee in the town where the apples are grown or from any other town or city in the State as the one making the complaint may choose, and in making such decision if more than four per cent. of the apples in a barrel are below the standard for that grade the goods shall be condemned and may be rejected by the purchaser, and if it is evident that the party who packed the apples did it with the intention to defraud by putting in apples other than those named on the face end of the barrel, which shall be of one variety only, or small, inferior, or diseased apples ; he shall be punished by a fine of not less than ten dollars or more than fifty dollars for each barrel so fraudulently packed.

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*NOTE—And the packer shall put his name upon the face end of each package.

The following is contributed by Mr. Robt. Mills of East Oakland, Cal.: The greatest concern of your Society seems to be a National plan for "inspection, grading and packing of fruits for export and interstate shipment," which will show honesty *inside* of each individual package.

Rascality in the packing of the products of the farm garden and orchard, by which the consumer is wantonly robbed of his good money, has become epidemic and is rampant throughout the length and breadth of the United States. Drastic remedies must be administered in desperate cases of bodily ailments as well as that of commercial degeneracy.

When an orange packer marks a box with the number it contains and the quality of the same it is accepted as prima facie evidence that it is true. But what of everything else that is packed to sell to the trade and ultimately to the consumer? A veneering of the choicest quality of the product being packed is dexteriously placed on top of the package, but an inferior quality is invariably found underneath which should grade as second, third, or refuse.

Years of observation and experience forces the conviction upon my mind hat the American Pomological Society can revolutionize the fruit packing industry in every market in America as well as foreign markets—and all to the greater renown of the Society by—

1st.—Establishing grades of quality not to exceed three in number. 2d.—Requiring that each grade shall average the same quality and size in a given package. 3d.—Requiring each packer to enclose in every package shipped for sale the name of the firm, and the name of the employee who packed it, together with the date packed. 4th.—Issue printed slips for pasting on the outside of every package shipped containing the requirements of the Society as to grade and quality of fruit, with a notice to the seller or consumer to promptly notify the Secretary of the Society if contents of the package does not strictly correspond with the grade and quality represented on the package enclosing the address of the original packer and the name of the employee who packed the fruit. Printed slips to be supplied by the Society to all shippers at a regular price per hundred. 5th.—Whenever complaint is made to the Secretary as to the failure of fruit to be of the quality and grade represented, the name of the packer to be posted in all markets in the United States and to be dishonorably expelled from membership in the Society—shipper and packers agreeing to be so posted when admitted to membership. 6th.—Formulate and have introduced in Congress an amendment to the Pure Food Statute defining the putting up of fruit for sale that does not strictly comply with the quality and grade represented *as obtaining money under false pretenses.*

With the protection of this official amendment, and the Eternal Vigilance of the Society reinforced by purchasers who may be swindled, I think that a long stride will have been taken in the direction of more honest methods in the packing of fruit for sale than unfortunately now prevails. Packing vegetables for sale could be included in the same regulations proposed to apply to packing fruit.

A Member: I don't believe that anyone has any particular sympathy with a rascal, and if a man was mean enough to face up a barrel of apples with fine fruit, and put in the middle a mass of bad fruit of diseased things, he ought to be punished. I have heard of a man who put a stick of wood into a barrel of apples to help fill up. If this organization can do anything for the benefit of the apple trade in this country that would work better and bring them better results, favorable to everybody alike in the business, which would regulate the packing and grading of apples then it should be done. A man wants to buy a barrel of apples. He wants to buy No. 1 or No. 2. What are they? If we have a legal standard you know what you are talking about. I wish this organization would take this matter up, and I would like to help in bringing about legislation for that purpose.

Mr. Strong: It is a matter of great importance, and I move that a committee be appointed by the President to consider this subject and to report at the next session of this Society.

Mr. Hale: I would like to second Mr. Strong's motion for this measure but I think we have legislation enough, and we do not want a whole lot of commissions. In this country, the fruit growers in America are getting to be manufacturers of fine fruit. They are going to throw out their seconds and thirds—their damaged goods,—and he man who is growing fruit today and has not good business sense enough to honestly grow his fruit and honestly pack it from top to bottom is bound to lose money, and the men who are packing honestly will win the market; there are good growers of apples, pears and peaches and fruit all over this country who are getting 10, 25, and 50 per cent. above the market because they are using good business sense. If this Society wants to establish a standard No. 1 and No. 2, I would endorse it. But we do not want any legislation. The old time fruit grower and dishonest packer is going to be frozen out.

A Member: I thoroughly sympathize with the remarks of Mr. Hale. I have had a great deal of experience and I think it is for the interest of every grower to select his fruit with great care. I think we are getting educated up to the point that they will do it out of self respect and self interest. I believe that every man should put his own name upon his own fruit. That will be a safeguard. No one will take a barrel of bad fruit and put his name on it.

Mr. Wood: I wish to say that I hope the Society will concur in the resolution offered by Mr. Strong. It seems to me that this is eminently a subject worthy the consideration of the committee. I think a committee should be appointed to report at our next meeting. It can present the reasons for legislation, if there are reasons, and if they find that the common sense is sufficient they can report on that. We ought to have a report from the committee on this question. It is a vital one to all exporters of fruit. I have learned from some of the exporters in New York that they cannot accept a package of fruit sent by the growers of this country. They have to send men to the orchards to attend to the packing. This should not be so. I am of the opinion myself that we do need a law. It may be that Mr. Hale is right and we do not, but I suggest that this matter be referred to a committee to report at the next meeting.

Mr. Powell: Would not a short way to reach what we are after be for this association to endorse a standard established by the National Apple Shippers' Association? If that is endorsed it seems to me that it would be the standard.

The Chairman: The chair might suggest that those standards are probably not known to the persons present, and we cannot vote intelligently.

A Member: You may have a rule. It doesn't amount to anything unless you can enforce it. The National Apple Shippers' Association have established certain rules. Do they enforce them? No, they never have and it doesn't amount to anything. Can you enforce it? If not it would amount to nothing. It should be enforced. We would like to have this thing regulated without appeal to the law, but we cannot do it. Mr. Hale nor I nor anybody in this room will live long enough to see this properly done without some legislation.

Mr. MacKinnon: Mr Hale's remarks to the effect that the growers on this side would probably very soon learn in a business like way to regulate this export trade, implies that the Canadian could not learn this same lesson. The trade in Canada is not in the hands of the grower. The "Fruit Marks Act" has led to some forty prosecutions in the courts. Of these forty, two only were against the growers of fruit as such.

The Chairman: We will have to cut short this discussion and take a vote upon the motion that a committee be appointed to consider this matter and report their decision at a future meeting.

It is carried. (See committee.)

The Chairman: Now we will have a paper by Mr. Geo. T. Powell, of New York.

SHOULD THE COMMERCIAL GROWER PLANT VARIETIES OF HIGH QUALITY.

George T. Powell, Ghent, N. Y.

In the planting of fruit upon a commercial scale, a number of important factors need to be taken into consideration by the grower, among which may be named in their order; first, the second or third party of the second part,—the consumer; second, the variety of the character of the plants,—as to vigor in growth of vine or tree, and its productiveness; and third, shipping quality.

The commercial grower, however, generally reverses this order of consideration. As he plants upon a large scale, and his object is to handle fruit from the standpoint of wholesale operations, his first consideration is that of quantity,—and second carrying quality. He gives but little thought to the consumer. His dealings are with the first party of the second part, the broker, and when he has unloaded upon him, the largest quantity of fruit that he is capable of producing, he feels that there his responsibility has ended. He gives little consideration to the manner in which the consumer receives his product,—whether with satisfaction or with the feelings of one who may have met with disappointment in his purchase. The grower may have for his product, gold in his pocket, but the consumer may have from it a remembrance, a feeling, far from one conducive to the further liberal demand, or use for fruit.

So far has the interest of the consumer been ignored, and even imposed upon that he now not infrequently, offers public protest against the quality of the fruit that he is expected to consume.

I give a few comments as they are now too frequently expressed, through the press, however not without cause:—

The Commercial Bulletin and North-Western Trade, says: "There is nothing the consumer appreciates more than good fruit. Give him a perfect fruit at a good price and he feels better over the purchase than if he buys a poor fruit at a low price. Never in the history of merchandising in the northwest has there been such a large quantity of poor apples shipped into this section of the country as was the case last fall."

An editorial in the New York Times, on August 18th, was devoted to "The Degenerated Musk-melon," in which the writer emphasized the general disappointment that the consumer continually met with in the poor, insipid, flavorless melons that are of late years shipped to markets in increasingly large quantities. After repeated attempts to select a good flavored melon, as the market man used to be able to do, the consumer gives up in disgust; finding them all alike, insipid, degenerate, he turns to some other fruit." It is not the melon that is degenerated, so much as the grower who has so little business sense as to ship such fruit to market. The quotation for this kind of fruit, after the first shipment, quickly went down to 50 cts. and $1.00 per carrier. The appreciation of the consumer for melons of high quality, is reflected in the prices he is willing to pay when he is sure he can get them; $20.00 having been paid for the first carrier of Rocky fords this season, and $10.00 later for larger quantities, while car loads have since been sold for $4.50 to $5.00.

Green's Fruit Grower for August says:—

> "Remember that in planting varieties of fruit of poor quality, that you are "reducing the demand for fruit of good quality. The consumer has not a "knowledge of varieties and when you sell him a poor variety of apples, "peaches or grapes,—he forever condemns all varieties of those fruits,— "as poor."

In no one thing does high quality enter more largely, than in the food we eat; and in fruit may be found the most highly prized luxury which is purchased at the highest cost of any foods that are offered in our markets.

This brings us to the subject of varieties. In apples, of which we have a very large number of varieties of all grades of quality, as to flavor, there are a few well established, well known standard sorts that have commanded the first attention in all markets. Among the summer varieties most prominent may be mentioned—the Red Astrachan, Benoni, Early Harvest, Primate, Sweet Bough, Williams, Yellow Transparent.

This class of apples is used more largely for cooking purposes than for dessert,—and from these might be selected according to the section or locality, as possessing excellent cooking quality,—and in general demand the Astrachan, Primate, Sweet Bough, Williams, the two last named when ripened, coming within the list of excellent dessert fruits.

In the autumn varieties there is an imposing number to select from. Alexander, Duchess, and Twenty Ounce, may be considered as highly profitable varieties,—yet not possessing the highest quality. Their chief value is in their cooking quality. While the Gravenstein, Fameuse, Porter, Rambo and Smokehouse, may be ranked among the finest of dessert fruits. With the exception of the Alexander, the first named varieties are generally large yielders, while the last, with possibly the Gravenstein to be excepted, are equally productive.

In the planting of commercial orchards of winter varieties, we would follow the same principle,—choosing those varieties that combine the highest qualities for both dessert and cooking purposes. The Rhode Island Greening may be taken as a standard, representing combined high quality. It never disappoints wherever it may be found upon the corner stand, as an after dinner apple, or in any cooked form that may be desired. Yet with the failure of the present orchards, this grand old standard of highest excellence will largely pass out, for new orchards are not to much extent, being planted, and it is being rapidly superceded by a different type represented in the most showy, attractive, but woefully disappointing Ben Davis. Take away the colour of the Ben Davis,—its one quality only of attractiveness,—and but the most limited quantity of it could be sold in our own or in any foreign market.

Are commercial growers using the best judgment in planting a variety so exclusively, with but one quality—its colour as the chief incentive to the buyer to purchase? The positive effects of such policy on the part of the grower is to discourage and to depress the consumption of his own product, and to encourage competition from other sources. If we are mistaken in judgment upon this point, will any grower of the Ben Davis, when away from his base of supply, and desiring an apple to eat, step up to the corner street stand, and buy one arrayed in all its glory of colour, in preference to a Rhode Island Greening, a Grimes' Golden, a Yellow Bellefleur or a Roxbury Russet, if they are upon the same stand with their plain, unpretending colouring; and give his reasons for such preference.

So diversified are conditions as to soil and climate, that to recommend varieties best adapted to a locality is difficult and impractical. We speak of varieties, only as representative of the high quality that it is desirable to produce, and the questions of hardiness, vigorous growth, productiveness and carrying quality must be worked out by the grower wherever he may be located.

In winter varieties of apples, the Newtown Pippin commands the highest value of any variety that is shipped to the English market. At times it has sold for eighty shillings English money or $20.00 per barrel. From the Robert Pell farm at Esopus on the Hudson, it has sold for $22.00 a barrel. It is not fancy color, but rather the keen discernment, and appreciation of exceedingly fine flavor in the Newton that draws these high prices from the purse of the English consumer. The King, Esopus Spitzenburg, Jonathan, McIntosh, Northern Spy, Hendricks and Red Winter Sweet, represent a range of varieties that possess the finest flavor, that are highly attractive in colour, that are in general demand, and are sought far at the highest value.

The commercial grower will raise the objection that the King, as a tree is constitutionally defective, short lived, and on that account is not a safe or profitable variety to plant, that Spitzenburg does not yield enough fruit to pay, that Jonathan is open to the same objection, besides being a slow grower, that McIntosh drops its fruit badly, while the Spy is a poor keeper, and bad shipper, and that these varieties may be grown, with profit only by those who can place them in a special line of fancy trade. Admitting that to some extent these criticisms may be true, the grower must rise superior to these difficulties.

The breeders of live stock, are constantly confronted with the same character of problems, but they successfully meet them. They desire to breed from superior stock, that may have weakness or defect in some important point. If this occurs in the dam, a sire is chosen who is particularly strong in that particular point with the result, that ideal offspring is obtained. The same principle may be applied in the propagation of trees to overcome some weak point in a very desirable variety.

For a number of years, we have been growing the King, top-worked upon the Spy, a very much stronger and more vigorous stock. Not only are these trees showing great vigor in growth, but they are developing large bearing surface, and are producing regular annual crops of superior fruit. We are working upon the same line with Jonathan, Spitzenburg and McIntosh.

This is a field that has in it possibilities at present not fully understood, and we may yet be able to grow in the greatest abundance varieties of the highest quality, but with some weak tendency, and with them, largely supplant varieties of lower grades.

This principle for apples will apply with equal force to other kinds of fruit. The grape growers who will persist in growing the Champion grape and alluring by its earliness the consumer into buying a few of his early shipments, is continually inviting disaster to the best interests of grape culture.

The consumer whose teeth have been set on edge, and remembering the tough, indigestible pulp of the Champion, and the sting of its foxiness upon his palate, quickly drops the price from ten cents a pound to two, and thereby fixes and establishes the price he will pay for all grapes that are to follow. The sooner grape growers pull out the blocks of Champions in their vineyards, and cease to force upon consumers annually a disappointment in their first purchases of grapes, the sooner will they be able to command better value for the varieties of high quality.

In this season of unusual dearth of fruit, the commercial peach grower may with profit, pause and take the time to consider well, and carefully, *his* ways. In the effort again to discover a variety that was hardy and productive, and in addition possessed with good shipping quality and one that would stand up after a long journey, the Elberta was found to meet very fully these requirements. Valuable as has been Elberta as a money maker for the commercial grower, it is not of sufficient high quality to hold consumers to it, indefinitely; to the exclusion of all other varieties in its season. The claim is made that many of the white peaches which are fine in quality, will not and cannot be grown with profit. A peach that will not rot, will not in the fullest measure meet the real wants, or most enduring demands of the consumer. Some of the fine old varieties, such as:—Honest John, Old Mixon and Stump of the World, which are being excluded from many of the more recent great commercial plantings, would meet an unlimited demand, if they were more generally planted. During the past season, with its climatic vicissitudes, the Elberta and other considered very hardy varieties have suffered as complete annihilation as other varieties of higher quality, and commercial peach growers may well reflect upon some of these things.

As a forceful illustration of the increasing discernment of the consumer, and of his future demands for higher quality in the products which he consumes, a Pennsylvania town may be mentioned that had grown to a high degree of prosperity, through many years of the production of potatoes of recognized fine quality. A new variety of potatoes was introduced that gave an enormously increased yield per acre, and every grower cast off his old varieties, that had built up his home, and brought to him all he had of worldly success; but the new comer, while adding thousands more of bushels in quantity, was poor and disappointing in quality, and the consumer who had for years known the unif ormily good character of the potatoes from this township, and had been willing to pay above the regular market price to obtain them regularly, dropped out the new comer suddenly when it reached them, refused to use it, and an entire community, highly prosperous from its one speciality of a high grade product was quickly overtaken by disappointment and ruin, by lowering the standard of its most important product. Another very striking illustration is given to show the effects of food upon digestion. The managers of an asylum for blind children in Ohio thought to cheapen the cost of the institution by substituting oleomargarine for butter. For a time the children used the substitute, but it was discovered that after several weeks they used less and less of it until finally they nearly ceased consuming it. When the children were asked if they did not like butter, they replied, yes, but did not care for it. It was simply a physiological condition. The delicate stomachs of these children could not assimilate and digest so readily an animal fat of lower grade than that of the butter fat, and they rejected it from a perfectly natural law.

This principle works the same with fruit. There are large numbers of consumers in cities who are losing the taste for peaches. After they have been supplied with the Elberta peach exclusively for a time, they cease to relish the fruit, and it is because it is below the standard of high quality, and unconsciously, they begin to cease to like peaches.

Never in the history of fruit growing has there been the extension of orchards upon such enormous scale as at the present. When these shall come into their full powers of production, then will come the real test of the value of varieties, and those which have the highes and best quality will best stand this crucial test.

By that time we shall have a broader knowledge of the fungous attacks upon the finer varieties, and be better able to protect them, we shall have better shipping facility for more delicate fruits. We shall have far more knowledge of the principles of cold storage and the several problems that enter into the successful holding of choice varieties, so that a thick, tough skin will be eliminated, as a requirement for the long keeping or safe shipping of a more delicate variety.

The commercial grower will in the future be forced to eliminate from his mind the thought of high prices. Fruit, like potatoes, is rapidly being considered as a necessity rather than a luxury, and when it is purchased upon this basis, then the consumer, be he rich or poor, will demand the best.

The only hope of the fruit grower for the future, is in the production of the highest quality, for upon that depends wholly the largest possible increase of consumption to keep up with the enormous increase in production which will soon be felt in our markets of the future. He who plants trees plants for time, and may his act be blessed by the generations that follow who may partake of their fruits, with pleasure and with satisfaction.

DISCUSSION.

A Member: May I ask a question? How do you manage the Spy as a stock for other fruits.

A. I take a two year old Spy and work King in the top for the reason that the weakness of the King is in its body. The tree fails before it is a dozen years old. Now the hardiness of the Spy overcomes that defect and you get a perfect King orchard on your Spy stock.

The Chairman: Now we have a very important paper entitled "Pure Food Legislation and its Relation to the Fruit Grower." It touches the conscience and the pocketbook of every man here. I call upon Dr. W. D. Bigelow, U. S. Department of Agriculture.

FOOD LEGISLATION AND ITS RELATION TO THE FRUIT GROWER.

BY W. D. BIGELOW, WASHINGTON, D. C.

Chief of Food Laboratory, Bureau of Chemistry, U. S. Department of Agriculture.

We are often told that fruit adulteration is on the increase—that notwithstanding the great popular awakening on this subject; notwithstanding the advances of analytical chemistry as applied to the examination of foods; notwithstanding the fact that the state legislatures of many of our states are constantly putting their food laws into more practicable form and each year marks a distinct advance in this direction—the percentage of adulteration is greater today than ever before. Such statements have a foundation in fact, but are only partly true. Honesty in commerce is more prevalent than at any earlier period in our history. The fact that adulteration is more abundant now than formerly is not due, therefore, to a lower standard of morality in manufacturers and dealers, but is due to the fact that opportunities for adulteration have greatly increased.

The foods of the most civilized people of early historic times were few and simple as compared with ours of today. They had no market filled with all manner of foods in an advanced state of preparation. The food materials they bought and sold were mainly raw and crude, and their preparation for use was the duty of servants or members of the family. When there were "Two women grinding at the mill" the meal was made of such grain as the householder furnished. Spices came to them unground, with none of their virtue extracted.

The list of fine family groceries was a very short one. Our far-away fore-bears lived closer to nature and knew less of art than we. Food adulteration as a great evil follows manufactures and commerce and flourishes in the train of a broadening civilization. A disposition to defraud was not wanting to the ancients, but skill to invent and a large opportunity to apply are modern.

The sanitary regulations of the Jews, included in the teachings of Moses in the wilderness and in the Rabbinical laws which were given the Jews at an early date, contained exact directions regarding the preparation of certain of their foods. In this connection it must be remembered that the Jews were essentially a people of this world. Moses scarcely referred to a future life, and it is hardly to be conceived that he did not have in mind the sanitary bearing of the laws he gave to his nation. Rather, is it probable, that he sought to elevate simultaneously the physical, moral and spiritual natures of his followers, and that he deemed it best to surround his directions with glamor of mystery and superstition.

"Ye shall do no unrighteousness in judgment, in meteyard, in weight or in measure; just balances, just weights, a just ephah and a just hin shall ye have." This command had reference to commerce in general, but it is mentioned here because similar requirements have commonly been included in food laws. The range of possible adulterations at the time this command was given was necessarily limited and required for its development a corresponding growth of commerce and manufacture.

In the 11th and 12th centuries commercial integrity was at its lowest ebb. The condition of affairs at that time has been graphically described by Luke Owen Pike in "A History of Crime": "False weights, false measures, false pretenses of all kinds were the instruments of commerce most generally in use. No buyer would trust the word of a seller, and there was hardly any class in which a man might not with reason suspect that his neighbor intended to rob or even to murder him."

Then came a change. As a result of the Crusades, manufactures became diversified, and commerce made a corresponding growth. A number of food laws were adopted at this time, and from that day to this legislation on this subject has increased. Before this period we have a few isolated laws, but none of great importance. Food legislation may, therefore, be said to have begun with the 13th century, and from that time until the middle of the 19th century it increased and made such progress as it might with the crude methods that existed for detecting adulteration.

The middle of the 19th century marks the beginning of the present epoch of food legislation, brought about by the first serious application of analytical chemistry and microscopy to the examination of foods. I refer to the work of the Lancet Sanitary Commission, established by the editor of the Lancet, and conducted largely by Dr. Hassall with the occasional collaboration of Dr. Letheby. The public sentiment awakened by the reports of this commission led directly to the general food law of 1860 in Great Britain, and doubtless greatly influenced legislation of other countries. The general food law of France was enacted in 1851, and that of Germany somewhat later.

During the decade beginning with 1850, therefore, we find a general awakening to the necessity of food legislation all over the world, and such legislation has been systematized and made more practicable until at the present time the character of the food laws enforced in any country may almost be taken as an index to its civilization. For reasons that have to do with sentiment and patriotism we are scarcely willing to apply this rule to the United States where practically no federal legislation on this subject has been enacted.

In food legislation at the present day we can learn some lessons from the methods followed four or five centuries ago. During the thirteenth, fourteenth and fifteenth centuries the manufacturers of certain foods in Germany were organized in what was known as "guilds," who adopted regulations of a very strict type for the government of their members. The violation of these regulations met with prompt and severe punishment.

At the present time it is difficult to enforce regulations regarding the purity of foods without the united and cordial support of the better element among the manufacturers of those products. For instance, laws regulating the manufacture and sale of fruit products need for their efficient and just enforcement the hearty and cordial support of fruit growers and the manufacturers of fruit products. The dairy industry has realized this fact, and the last few years have witnessed a remarkable illustration of the success of their combined efforts to secure federal legislation. The olive oil manufacturers of California are banded together and have obtained legislation sufficient for their needs, though they have not yet secured its enforcement.

A few years ago the practice of mixing a fine corn flour with wheat flour became somewhat prevalent in some sections of the country. The practice was disastrous to mills desiring to do an honest business, and millers, who are perhaps as jealous of the reputation of their product as any other class of manufacturers, banded together with the determination to secure legislation that would effectually prevent the practice complained of. The result was that after a few months' trial they secured the passage of the "mixed flour" act of June 13, 1898, and the enforcement of that law has effectually stopped the adulteration of wheat flour.

When Hassall and his associates prosecuted the work of their celebrated commission in the early fifties many illustrations were found of food adulterated with injurious substances. At the present day such impurities are almost unknown. There are, it is true, substances, which are believed by many to be somewhat deleterious in their action. Practically none are employed however which are known to be injurious, though the adulteration of food intended for invalids and children is always serious. I think I may say, without fear of contradiction, that no manufacturer of prepared food or of foods of any character will use in their preparation a substance which he regards as injurious to health. Even if we suppose, for the sake of argument, that such manufacturers are actuated entirely by selfish motives, we must still admit that they are good business men. It is not to their interest and they do not desire to shorten the lives of their customers, or even in any way to give them a substance which will lessen their appetite. They would like to see them live a thousand years, and eat five meals a day. If any substance is used by these men which is injurious to health its use is due to lack of information and not to maliciousness or indifference.

The wholesomeness of certain substances that are commonly used with foods, such as preservatives and coloring matter, is attracting more attention today than ever before. These are questions that are difficult to decide, and the Bureau of Chemistry is at present engaged in a very exhaustive investigation and is prosecuting it with as much vigor as possible. During the past year our attention has been devoted to the study of the influence of borax and boric acid on nutrition, and in the near future salicylic acid and other preservatives will be taken up. Legislation in regard to substances of this nature is hopelessly diverse. Several European countries forbid their use altogether. In England their use is permitted unless they are proven to be injurious in each separate case. In this country chemical preservatives are in some States absolutely prohibited, in others permitted only in foods labeled with a statement of their presence, and in still others there is no restriction to their use whatever.

Since injurious impurities are excluded with the exception of certain products whose wholesomeness is doubtful in the quantities in which they are ordinarily employed, the question of food adulteration becomes almost entirely one of honesty, fair dealing and correct labelling. and there are many questions in which the fruit grower is particularly interested. In the first place, we may consider a broad phase of the subject ; that is, our reputation at home and abroad, and as an illustration of the point to which I refer I wish to cite an incident which occurred several years ago in the sale of a product quite distinct from fruits, but which bears on this subject.

It is well-known that the reputation of American dealers in many products is of the best, and it is frequently customary for sales to be made by sample, the description of the consignment being sent by fast steamer, the consignment itself by slow steamer, and the check in payment of the goods often being sent on the receipt of the bill before the arrival of the cargo. Countries with a less fortunate reputation are required to wait until the goods have been received and sampled, and the samples examined before payment is made. Several years ago an American firm filled a large order for soap grease which was sold by sample and according to specifications limiting impurities to one per cent. When the goods were received, and after payment had been made, it was found that the fat had been melted and churned with water during cooling so that it contained over twenty-five per cent. of water. In spite of repeated protests, the firm making the sale refused to make good the loss of the purchaser, and as a result not only the reputation of the firm was injured, but American dealers as a whole suffered.

This lesson is of most general application. A few days ago we received a letter from a well-known firm in California who stated that it was the practice of certain dealers in that state to purchase dried fruit of various descriptions from small manufacturers, add water to increase the weight about ten per cent., treat them with a large amount of sulphurous acid, and export them in a condition which would almost preclude their sale. Our correspondents, who have large experience in the production of fruit, feel that this practice is of the greatest detriment to the reputation of the California fruit trade, and are exceedingly anxious that it should be stopped.

It is the practice of some European countries to be most careful in regulating the purity of their own foods, but to ship to other countries foods that may be in conflict with their own laws, provided they do not violate the laws of the countries to which they are shipped. This practice, however, is quite contrary to American custom. In all of our states which enforce food laws prohibitions apply to manufacture and sale, whether within the state, or intended for exportation. It is not our policy to sell abroad foods that we do not consider safe for our own consumption, and as is evidenced by the law passed by the last congress relative to imported foods, it is not our intention to admit to this country foods of such a nature that their consumption is not permitted in the country of their manufacture, or from which they are imported.

It is a matter of common information that in keeping with the modern idea of making the utmost use of by-products and letting as little as possible go to waste, certain fruit growers and manufacturers of dessicated apples are accustomed to dry their peelings and cores, and put them on the market for various purposes. This article is used for the preparation of cheap and wholesome foods to which no objection can be offered when sold under their own names. A few days ago we received a letter from a large manufacturer in New York State who complained that certain parties in his state were accustomed to dry their peelings imperfectly so that when they were received by the consignees in Europe they had heated and were in such a condition that they could not be used in the preparation of foods. This practice our correspondent stated must necessarily result in greatly depreciating the value of this product and in limiting its use in Europe.

Food laws might properly regulate both practices I have mentioned; a limit might be placed on the sulphur content of dessicated fruit in general, and also on the moisture content of dried apple peelings. Such limits carefully selected and based on the experience of manufacturers would form safe criteria. Too much stress cannot be given the importance of having our exported foods uniformly good. An occasional shipment of damaged goods may lead to a feeling of uncertainty among the foreign public on the one hand, and on the other hand form a pretext for a species of alleged sanitary regulations that will materially injure our entire industry.

Canned fruit is also a subject that might receive attention from our legislative bodies. In the first place there are several sections of this country which have established a reputation for fruit of different varieties, and there is a practice, with which you are all familiar, of labelling fruits grown and preserved in one locality as coming from another—from a section with an established reputation for that particular variety of fruit. We often have peaches or pears of one variety sold under the name of another; for instance, Kieffer pears grown in New York or Maryland may be canned and placed upon the market as California Bartletts. This practice is unfair to all concerned. It is a fraud upon the purchaser who does not receive the article he believes he is getting. It is an injustice to the locality whose name is placed upon the label since it often leads to the sale of an article which is not so desirable, and thus gives the public a wrong impression, and reduces the demand for the article which it pretends to be. It has caused many orchards to discontinue the growth of Bartlett pears, and confine their attention to varieties which in many respects are inferior, but which yield a larger crop. It is an injustice to the locality where the fruit is produced and picked, and to the variety of fruit which is actually present, since it prevents both from establishing a reputation on their own merits. In the long run, no one is benefited, and as I said before, everyone concerned is injured.

It is possible that legislation might adopt certain grades for canned fruit, based on the quality of the fruit, or the density of the syrup. Of course in such cases laws would not require packers to use any definite term in their labels, but they might establish certain terms and require that if those terms appeared on the labels the contents of the package should be such as to justify their use.

Legislation may also prescribe certain requirements regarding the sweetening material added to the fruit. This, as you well know, is ordinarily cane-sugar, or beet-sugar which is chemically identical. Sometimes, however, especially in certain European countries glucose is added, and occasionally saccharin or some similar artificial product. The use of these substances is for the purpose of cheapening the product, and it is only just to the consumer, the dealer, and reliable manufacturers that their presence should be stated on the label.

The manufacturer of jellies might also be subject to food legislation for several reasons. For the purpose of this discussion jellies may be grouped into three general classes: first, those made entirely from the juice of the fruit specified and cane-sugar; second, those made from the juice of the fruit specified with the addition of a certain amount of apple juice for the purpose of insuring the formation of jelly and of cheapening the goods; third, jellies made entirely from apple juice, (often from a solution prepared from apple peelings and cores) glucose, and coloring matter.

The first class that I have mentioned is relatively expensive, and it is with considerable difficulty that large manufacturers are able to prepare jellies of that type on the commercial scale required for their business. On the other hand, there are many private families who add considerable to their income by making jelly and selling it to a special trade for a relatively high price. There are many, as you know, in our cities who are willing to pay thirty-five or forty cents a glass for jelly which they are sure is made as our mothers made it, or as our wives still make it in the kitchen, and there are a number of relatively small manufacturers who began by making jelly for a single dealer, or perhaps for a few acquaintances, and gradually increased their business until now a considerable trade is carried on.

A few months ago I visited such an establishment. It began when the family had not sufficient means of support. The husband was out of employment, and could find nothing to do. The wife began by making jelly for a few acquaintances. The trade rapidly increased, and at the time of my visit the kitchen had grown so that it included not only the entire house where it was begun, but also the adjoining house, and the time of the husband was fully occupied managing the business, while the wife directed the work of from twelve to fifteen girls who prepared jelly in small kettles on kitchen ranges.

The lady who conducts this establishment told me that whenever she received a lot of berries she tried a small portion in order to find out whether jelly could be made from them, and if it did not stiffen then the whole lot was used for jam. Of course work conducted in this manner is relatively more expensive than in establishments using larger kettles, and making no examination of the fruit, trusting to the addition of apple juice for giving the product the necessary consistency, and using for this purpose apple juice treated with a chemical preservative to keep it sweet.

Now I say that those consumers who desire jelly made entirely from the fruit designated and cane sugar, and who are willing to pay for this product, have a right to obtain it; and the manufacturer who is willing to give the necessary care and attention to the subject has a right to protection from the competitor who puts on the market a product equally nutritious, but of inferior value.

On the other hand our grocery stores are filled with jelly of the second class mentioned—jelly made by our largest manufacturers, containing chiefly the fruit designated, but a sufficient amount of apple juice to give the consistency required. Such a product is perfectly wholesome, and by taste cannot be distinguished from the product to which apple juice has not been added. This product has a large demand from people who are willing to pay what it is worth, and who would rather obtain it at twenty-five cents a glass than the product to which I have just referred at a higher figure.

And now, what about the third class of jelly? It is made largely from apple peelings and glucose, both of which are recognized as wholesome, and it is colored by dyes that are believed to be wholesome. It is demanded by a large class of our population who cannot afford the more expensive preparations, and yet to whom it is just as much of a delicacy as the jelly made exclusively from fresh fruit and sugar is to more wealthy families. There is a large portion of our population who cannot afford to pay thirty-five cents a glass or twenty-five cents a glass for an article of the nature of jelly, and yet their sick rooms require delicacies just as much as those who are more prosperous, and they have just as much right to a product which is to them a luxury, and which can be obtained at five cents a glass, as their more fortunate neighbors have to a more expensive article. The sale of products of this nature should not be prohibited, or unduly restricted. Prohibition should be confined to substances which are deleterious to health ; the sale of wholesome and nutritious food should not be limited, but common fairness demands that it should be properly labelled.

Now, if you will go into a grocery store where food laws are not enforced and ask for a glass of jelly, you may get a glass of the last class I have mentioned, which is not prepared from fresh fruit at all, but which is made entirely of apple peelings and cores and glucose, colored to the desired tint with aniline dyes. What is the result? In the first place you have asked for pure jelly. You have not set a limit on the price. You have only paid five or ten cents it is true, but you would have paid more if it had been demanded. You asked for a good article. You get home with your purchase. Perhaps you are not familiar with commercial jellies. The product is not satisfactory to you. The result is that after a few such experiences you come to the conclusion that commercial jellies are not equal to the home made article, and you stop purchasing them.

This may seem unlikely to a person who is not brought into close touch with the subject, but it actually occurs. Those familiar with the possibilities of the manufacture of such a product as jelly can scarcely understand how large a portion of our people are under the impression that a fairly good article cannot be purchased.

I wish to give an illustration of this subject in a slightly different field. I am a strong advocate of canned food. A few months ago, in the early spring, I was talking with a neighbor who expressed his delight that green vegetables were coming into the markets again. He stated that he had a great aversion to canned food, and whenever he ate it he could always taste the can, and it was his belief that no food could be canned in such a way as to be suitable for consumption. I did not argue with him—there is no use in arguing with a person who has reached such a conclusion—but I handed his wife a can of peas, and asked her to have them prepared and put on the table without his knowledge. The result was that he declared them the best peas he had had that season, and they were. Fresh peas necessarily consist of peas of different ages, large and small. Canned peas if properly prepared are selected mechanically, they may be fairly old, they may be young and succulent, but if properly labelled the consumer can choose the sort that he desires. The difficulty is that many manufacturers and dealers place on the market as first class articles, and at a relatively low price it is true, goods which are really inferior, and very many people think they do not like canned vegetables because they never tasted them properly prepared. They go to their dealer and ask for the best peas, or the best beans, or the best corn, and they get an article which, if not actually soaked goods, is at least more mature than they like.

This illustration is also applicable to jellies and to other fruit products. I frequently meet people who have the strongest aversion to commercial fruit products. Now if we could by law adopt certain grades, or certain terms, which would mean a certain thing, and require all who used those terms to conform to certain specifications, I am confident that the sale of our manufactured foods would be largely increased. Those who desire the most expensive article would purchase more of it than they do at the present time. There would be a great deal less jelly manufactured in the home from fruit bought in the market than is now the case. On the other hand, those who wish a cheaper article would not be deterred by the knowledge of its composition.

In the past, food legislation has been left almost entirely to the separate states, and it is unfortunate that this has resulted in enactments of the most diverse type regarding certain classes of foods.

A manufacturer who prepares a jelly from apples and glucose and colors it artificially is subjected to the necessity of printing a variety of labels if his product is to be placed on the market in several states. His wares must be labelled "Imitation fruit jelly, etc," in Illinois, Michigan and Washington; "Mixture" and "adulterated" in Minnesota and South Dakota; and "Adulterated" (or name and amount of each ingredient) in Kentucky; and there are other requirements in other states. Not only does this lead to hardship for the manufacturers and an unsettled condition in commerce, but it is unfair to both dealers and consumers to require that a wholesome product should be branded with a "Cognomen of approbrium." It is sufficient to indicate plainly and exactly what the nature of the product is. An article of this nature is not adulterated in any sense of the word if it is properly labelled and sold for what it is.

There is only one way to do away with, or even to lessen this conflict in the laws of the various states and that is to adopt a federal law regulating commerce between the states and with foreign countries. It is universally admitted that such a law would be used as a model by states which have not yet enacted food legislation, and that the states which already attempt to control the nature of the food laws within their limits would so amend their laws and regulations as to conform with such a federal law.

For more than fifteen years food bills have been before the various sessions of Congress, and at several times have come very near passing. For a long time manufacturers looked upon these bills with doubt and suspicion. At the present time all reputable manufacturers realize that the enactment of federal legislation is the only solution the difficulties under which they are contending at present, and manufacturers and dealers alike are lending their support in this direction.

At the last Congress the Hepburn bill, which comes nearer than any of its predecessors to complying with the requirements of manufacturers, dealers and consumers, passed the House, and was favorably reported to the Senate. Owing to the great number of important measures which occupied the attention of the Senate during its last days, however, it was impossible to bring the bill to a vote. It is believed, however, that if all industries which would be benefited by the passage of such an act could be brought together, and all would unite in making their representatives in Congress feel its importance, that no difficulty would be experienced in bringing it to a vote.

Are not the fruit growers greatly interested in such a measure?

After some discussion the following resolution was offered:

Resolved, That the American Pomological Society favors the enactment of a Federal law that will regulate commerce in foods between the United States and foreign countries, between the various States and territories of the United States, and within the territories and the District of Columbia to the end that consumers shall be protected against imitation fruit products under false labels.

Carried.

Adjourned until eight o'clock P. M.

A SYMPOSIUM OF IDEALS IN POMOLOGY

FRIDAY EVENING SESSION.

The president called the session to order promptly at eight o'clock and introduced as the chairman of the evening, Charles W. Garfield, of Michigan, saying that the program had been prepared by Mr. Garfield and was in his hands to develop, and he doubted not that the evening would be a pleasurable one in so good hands.

Mr. Garfield, in taking the chair addressed the audience as "Ladies and gentlemen and friends, good-natured people, and I trust, willing listeners to the toothsome program that has been prepared for you: the general subject for the evening is

IDEALS IN POMOLOGY."

In working out the program under this topic Mr. Garfield had called to his assistance nineteen different members of the Society whom he thought would best represent the different sub-topics to be considered, and greatly to the satisfaction of the Society every member assigned a topic responded and kept himself within the limited time allowed. A striking thing in connection with the subjects discussed was the fact that every man, in order to utilize his time, was in the middle of his subject in the first sentence. The following report gives the substance of the program as developed in the short addresses:

1. THE IDEAL DESSERT PEAR.

E. W. Wood, Mass.

Mr. Chairman: Owing to the different varieties of trees and the difference in the growth of pears in different localities, to say what the "ideal" pear is, is difficult. It may succeed in one locality and not in another. But for a long time the standard of quality in the pear has been the Seckel. That has been admitted, I believe, in all parts of the country, as the standard of quality. But we have here in Massachusetts a pear which from its manner of growth is a seedling from the Seckel, and is of more value to us than any other pear. It originated in Roxbury, was grown by Mr. Francis Dana and the stock was sold to Mr. Hovey of Cambridge, both of them appreciating the value and the quality of the fruit were desirous that their names should be associated with it, and they compromised the matter by calling it Dana's Hovey. Now the merits of that pear are such that among consumers it is considered of a value equal to that of the Seckel. It comes at the season of the year when we have no other first class table pears. Its time of ripening in the ordinary course of treatment without cold storage is the last of November. It is called by the market men here the "Thanksgiving pear." There is no expense about it, but treating it in the ordinary manner, keeping it in a cool place until eaten. It will be in eating condition the last two weeks of November. In size it is about the same as the Seckel,—a trifle larger. It will bring in this market twice upon an average what the Seckel brings. It has been sold here within the last ten years to some of our large hotels at $7 per bushel, and that is more than we get for any other pear. I think, Mr. Chairman, that our consumers and our growers will vote that Dana's Hovey pear is the Ideal Dessert pear of Massachusetts.

The Chairman: One of the pleasant things about this, is that I am not going to give any of you a chance to talk back. I next will have the pleasure of introducing to you a gentleman who is an entire stranger to all of you. His name is Prof. Taylor, and he comes from Nebraska or St. Louis or some other region out West.

2. THE IDEAL POMOLOGICAL EXHIBIT.

F. W. TAYLOR, ST. LOUIS, MO.

I want to deny the allegation that I am a professor. I am not, and I have not been one for so long that I have been trying to forget it. I do not think it was very fair—I was booked for a thirty minutes address this morning and now to be asked to boil it down to two minutes and a half is hard—but I must proceed.

I came here with a nice long speech which has been printed already in the papers in regard to the relations which should exist between the exhibition and this Society. I don't know of any better way that this Society can prove that it is a live organization than by studying those requisites that go to make up a good exhibit. The exhibitor who makes the heart of his chief glad is one who does not make him any trouble. He doesn't go and say "Now you have given me fifty feet square. What shall I do with it?" Some of the ways in which sensible things have been done in the past in regard to exhibits may be mentioned here, and they may be helpful to those of you who have to do with exhibits at the Exposition in St. Louis. I have noticed before I began the manner in which your fruit is displayed. Fruits are always found in conjunction with or relative to green leaves and colors that look well alongside the colors of the fruit. If you walk to the edge of this precipice here you will notice that the apples stare you in the face. I don't think that the Lord ever intended that fruit should be shown on that kind of plate. Wait until you know what kind of plates we have before you exhibit them at the St. Louis Exposition. Here the color scheme is entirely spoiled by the red brick walls and the white plates.

We have brought a lot of information from St. Louis which we know is good, as to the way in which fruit should be packed and preserved and handled and delivered at St. Louis for the Exposition. Before my two and a half minutes are up I will say that there are a lot of these pamphlets here and I hope you will come up and take one and you will find in it a great deal of information.

The blue-print on the wall is an illustration of the floor plan of the Horticultural building. In the central portion of it is an area 400 feet square containing about four acres, that is devoted entirely to fruit—to Pomological exhibits. That is more space than was devoted to Pomology at Chicago, Omaha, Buffalo and Paris all put together, and if you don't come down and show us how that fruit ought to be installed, you are not as good men as I thought. If you don't come down with a vast amount of material to make as good an exhibit as ever was in the world, then I shall be very much disappointed.

The Chairman: It is eminently proper, it seems to me, to consider some things in connection with this Pomological Society that are not strictly Pomological, because we are first something else before pomologists, and I think the thing that is nearest all our hearts is our home and our family Possibly there are things of more importance but I doubt it. Thinking thus, I shall call on Mr. Ragan of Washington to talk to us for a few minutes on the Fruit Grower's Family.

3. THE IDEAL FRUIT GROWER'S FAMILY.

W. H. Ragan, Indiana.

In regard to the family, Mr. Chairman, I am of the opinion that it should consist of a pair of good healthy parents, and about twelve children; that they should be located in the midst of a grand old forest, on the borders of civilization, in a log cabin 18x20 feet square, for instance, and that the ideal member of that family should be the eldest son; that he should be directed to go forth at a very early age in his existence and prepare the way for the coming civilization, marked by the coming of the orchard, fruit garden, etc. Now, you have my Ideal of a Family, the proper place for it, the place to begin. This forest is to melt away before the axe, and the ideal member of that family is to regret deeply the part he has had to play in the destruction of that beautiful forest. This was the ideal of 50 or 25 years ago. The ideal family of today differs in many respects.

The Chairman: The last speaker left out one of the principal members of the family, that is the grandmother. You know what a little boy said when he asked his father if he might go to see his grandmother, who lived thirty miles away. His father said, "Why, John, your mother and I will have to go too, and it will take a ten dollar bill before we get around to pay all the expense of it, and I tell you, John, you will learn sooner or later that ten dollar bills don't grow on every bush." "Neither do grandmothers" said John.

4. THE IDEAL DESSERT RASPBERRY.

W. T. Macoun, Ottawa, Can.

I suppose that next to the strawberry the most popular fruit in summer is the red raspberry. This is a very delicious fruit, but unfortunately our tables are often supplied with varieties that are not very palatable. We should introduce into our gardens the kinds that are best suited for home consumption. I think the Ideal Home Raspberry should score high in the following points,—hardiness, vigor, productiveness, size of the fruit, flavor, juiciness, color, length of fruiting season, and it should also have a moderate suckering habit.

First of all it should have hardiness. We of the North find that the great difficulty in growing the raspberry is in the lack of hardiness of the cane, and it is therefore necessary tnat there should be hardiness of cane. Then if there is not vigor one cannot expect large fruit, and we cannot expect large crops. We must also have productiveness, because if our families are as large as one of the speakers has hoped they will be, we must have raspberry bushes that will produce a large quantity of fruit. We should also have a variety that will produce fruit of maximum size, because there is nothing which tempts the young people to consume a large quantity of this luscious fruit more than the size. There should also be fine flavor, because this also will help to increase the consumption of the fruit. Juiciness is also important, and bright color as well. Length of fruiting season is very essential, because if there is a short fruiting season there will not be many raspberries.

We have tested a great many varieties of raspberries at the Experimental Farm at Ottawa and it has been found that among the best of these for home consumption is the Clark; but of late years there has been originated a variety called the Herbert, which so excels the Clark in hardiness and vigor, and is equal and superior to it in other respects, that I would advise you all to test this new sort. It will be on the market next year. It was originated by Mr. R. B. Whyte, of Ottawa, Can. It is supposed to be a seedling of the Clark.

5. THE IDEAL FRUIT PACKAGE.

J. H. HALE, CONN.

The Ideal Fruit Package first is a package that is neat and attractive and will catch the eye, a package that is rigid enough to carry fruit without bruising, yet light and attractive in appearance. Too many of our fruit packages are ill shapen and clumsy and have too much ventilation. I wouldn't have any ventilation whatever if the fruit could always be put into the package cool and dry. I would have an absolutely tight package rigid enough not to squeeze the fruit at all, a package that when opened will expose as much of the fruit as possible. Above all, I would have a package so small that dealers would never be tempted to break bulk in retailing and yet just as large as possible to go as packed at the orchard direct to the family home.

That is the whole thing, the ideal fruit package is the largest possible package that you can take direct to the home. If we put our fruit into the larger packages and compel the dealer to break bulk, we thus discourage the sale and consumption of our fruit, because when the father of the family is told to go and send up some fruit from the market, if it is a large package, too much for the family store room or immediate use, he buys it by the quart or pound and in much less quantity that he would if family packages were offered holding two to four times as much as he would naturally buy if offered in bulk; and if with the family package we can get more fruit into the home at one time the children will do the rest and we have at once doubled fruit consumption, for I have learned by long experience that from a peck to one-half bushel of good eating fruit will last no longer in a healthy family than two or three quarts. A strong, neat-handled basket, possibly somewhat after the style of grape baskets, now so common, may solve the problem and do more to stimulate fruit consumption than even the good work of brother Collingwood's Apple Consumers' League.

6. THE IDEAL DESSERT APPLE.

W. M. MUNSON, MAINE.

The ideal dessert apple for America can not be named, since the ideal for Maine is very different from that of Texas, and the fruit which is regarded most highly in the southern states is of little value in the northwest.

One of the first requisites of the ideal dessert fruit, however, is an attractive appearance. No matter how delicious a fruit may be, unless its quality is known, it must attract the eye in order to appeal to the average consumer. A rusty or a green apple adds little to the banquet board or to the dinner table, and is seldom desired by the boys and girls who gather round the fireside on cold winter evenings. The children do not care for it and older people are not tempted; thus one of the Lord's best gifts is wasted for want of an attractive coat.

That the ideal apple should be of good quality goes without saying. The skin should be tender; he flesh crisp, tender, rich and juicy; the core small and inconspicuous. The size should be medium; the form regular, nearly spherical or slightly conical; the stem rather short and slender, inserted in a cavity of only medium depth; the basin rather small, even, and the calyx small and closed.

The tree should be a vigorous healthy grower both in nursery and orchard, and it should be prolific. Otherwise nurserymen will refuse to propagate it and orchardists will refuse to plant it.

With the qualities suggested in mind, I have no doubt that each of you will recall some favorite variety; and yet, if the name of the ideal apple were called for, I doubt not that a dozen different sorts would be mentioned. I hear one man say Jonathan,—and that does come about as near as possible to the ideal in some sections of the country. But another would say Mother, another Garden Royal, another Fameuse, another Lady, and so on through the list. Now Lady, which sometimes brings fabulous prices in New York, is absolutely worthless as grown in Maine; while Garden Royal, which is a superb dessert fruit in September and October, is hardly known outside of New England.

Only a day or so ago a gentleman from Chicago informed me that one of his best customers who wanted apples for dessert purposes would pay him a dollar a barrel more for Ben Davis than for any other variety. Poor benighted fellow! But this customer wanted the fruit for a hotel table, not for the home. There is a lesson in this, however. People will eat an apple that is attractive in appearance, even if the quality is deficient. If now we can put into the attractive form of a Ben Davis the good qualities of a Grimes or a Pomme Royale, we are approaching the ideal.

In general, given the standard of highly colored, highly flavored, tender, juicy, rich, medium sized apples, put up in the ideal attractive package which has already been described, and it is unnecessary for me to name any one sort as *the* ideal dessert apple.

7. THE IDEAL EDUCATION FOR THE FRUIT-GROWER.

KENYON BUTTERFIELD, RHODE ISLAND.

Of course, the boy who is to receive an ideal education as a fruit grower must be an ideal boy, else he can take only partial advantage of the ideal education.

This boy will be born and bred upon a good fruit farm, situated in an area given over quite largely to the fruit industry, in a locality of natural scenic beauty. He will be born of parents who love the country intelligently and religiously. Because of his heredity and his environment, he himself will have an ardent love for country life, for the growing tree and plant,—a genuine enjoyment in the perfection of leaf and limb and fruit. He will have, in other words, an innate, unconquerable love for horticulture.

The next element of his education will be the absolute freedom of the entire domain possessed by his parents. He will run wild—but not too wild—during his earliest years. Gradually he will receive a little pruning and training. His natural tastes toward observation will be cultivated, and he will be given little tasks that will have their educational value, even more than their economic value But, best of all, he will learn the secrets of forest, and stream and flower, and make friends with the birds. And these, added to a sweet and cultured home life, will be his first teachers.

He will not enter school at a very early age, but when he does go it will be to a good district school or to a modern centralized school in a rural environment, and to a teacher who has had some training for her work, and a large talent for it, a mighty love for the child, and a deep sympathy with rural life. The schoolhouse, within and without, will have those simple but artistic touches that will bring the school, in this boy's mind, into full harmony with the beauty which he has thus far seen. His vacations will be spent partially at work, but work that is not too strenuous; and he will not be denied plenty of time for rich and well earned play.

This boy will also have the advantage of a high school course or its equivalent, in which he can secure a thorough, fundamental training in mathematics, Latin, English, and the beginnings of the modern languages, and where he will be under tutors who are not merely fledglings.

He will enter college, possibly, but not necessarily, an agricultural college, and preferably a small college of high grade, where for two or three years he will continue his general education, obtaining a fair mastery of French or German, getting an insight into general history, a further training in English, cultivation in literature, and a thorough grounding in the elements of the sciences underlying his future occupation,—securing an especially thorough acquaintance with botany. He will also give considerable attention during these years to the social sciences,—political economy, sociology and government, so that, when he takes his place on the home farm, he will be able to stand as a leader in his community, and, through the agricultural paper, the farmers' organization, the farmers' institute, and the political caucus, show the way to higher levels of social and political service.

He may not take his degree at this college but if he does not, will enter an agricultural college with a strong horticultural department. Here he will give the major part of his time for two years, and until he takes his degree, to scientific and applied horticulture. His minor work will be done in applied science so that he shall have a thorough knowledge of economic entomology, economic botany, and plant diseases. His long vacations, during school and college days, will have been spent largely on the home farm, and mostly in practical work, gathering and marketing crops.

After his graduation at the University, he will spend a year in travel in the United States and Europe, studying horticultural methods, conditions and markets. He will then return to the home farm to take his place as the active partner of his successful father, and the ultimate manager of an increasingly productive and beautiful country estate.

8. THE IDEAL CLUSTER OF GRAPES.

Dr. J. B. Ward, New Jersey.

Dr. Ward: Before speaking on the Ideal Cluster of Grapes, I just want to indorse what was said in regard to the Dana's–Hovey Pear, and I think that the more of those pears that are grown—the fewer Kieffers we shall want. One of the poorest pieces of work that went out from New Jersey was when the Kieffer pear was given to the public.

Now, we come to the ideal grape. There will be several points that I want to make: First, the vigor of the vine; second, the size of the cluster; third, the color. You must have vigor to develop a cluster, and a grape that will not shell and the color should be black or a dark purple. Black grapes seem to take better in the market than either the red or the white. Then this bunch should be, while not over large in size, a good long bunch, well appearing and well shouldered. We all know that a bunch of grapes that is well shouldered is a great deal more attractive than one that is not. It should have a thin skin, yet of sufficient strength to prevent its shelling. Then the last thing is quality, nothing of a foxy nature is needed, and to my mind the nearer we can approach the Newburg Muscat the sooner we are to arrive at perfection in the grape. When we get something near that delicate flavor, with an aroma that lives in the mouth after tasting one berry, then we are approaching the Ideal Grape.

9. THE IDEAL PROFESSIONAL FRUIT GROWER.

A. G. Gully, Conn.

The ideal professional fruit grower may find under some circumstances that ideals are not always practical. A friend of mine some years ago was growing strawberries for his home, city market. He intended to put fine fruit on the market and in good shape. He desired also to receive the credit for it. He had his boxes all plainly marked with his name, and filled with fruit of which he was willing to be known as the grower. Two days after selling such berries, he was surprised to see the same boxes with his name still as plain as ever again on sale, but filled with a very different grade of fruit, and from another grower. His ideal of a professional grower did not succeed in practice; another man had a different ideal.

The ideal professional fruit grower must make money, that is, he must grow what the market demands and pays for, whether it be Baldwins in New England or Ben Davis in Missouri, and what will pay. He must be successful commercially. It goes without saying that he will use all the modern methods to attain that end, but he may be forced to grow and sell varieties which his own judgment tells him are not best. But the ideal grower will, after he has succeeded in the business, take up the work of the education of others, by growing and inducing the consumer to use fruit of better quality than that usually for sale. He will also have to demonstrate that those finer grades cannot be grown as cheaply, and he will have to convince the consumer that he can afford to pay for quality. The ideal fruit grower will also pursue new plans or lines of business. He will experiment for the benefit of himself and others as far as his time or ability will permit. This may be in either methods, varieties, soils or localities. To illustrate, one of our ideal fruit growers of Connecticut is taking hill land not worth a dollar per acre in the natural state, and turning it into profitable fruit farms. He is demonstrating how much valueless New England land may be rendered valuable. Such are some of the requirements of the ideal professional fruit grower But beyond all this he must have a real love for the business. He must like the work aside from all profitable considerations. Indeed, if this is not a prominent part of his character, he will fall short of reaching the fullest extent the other qualities required of him as an ideal professional fruit grower.

10. THE IDEAL MARKET APPLE.

L. A. Goodman, Kansas City, Mo.

In the five minutes talk you gave me on "The Ideal Market Apple for Transoceanic Shipment" I find myself puzzled just what phase to discuss. It is certain that the handling and shipping has more to do, than even size, quality, beauty, and perfection of condition when the packing is to be done or the shipment to be made

In order to make a test of varieties and care of handling, and carrying qualities of some of our Western commercial apples, I packed a car load of 200 barrels of apples and shipped them to Amsterdam. At the same time a Hollander who was in Kansas City at the same time, bought a car load of good No. 1 apples and shipped them home to Holland.

My lot, I had wrapped and while being wrapped had every thing rejected that was in anyway damaged and in the least unsound. The varieties were Gano, Ben Davis, Winesap, Mammouth Black Twig, York. A few barrels of Huntsman, and of Arkansas Black were added for beauty. I think I never saw any more beautiful apples than were some of the Gano, Huntsman and Arkansas Black.

I wrote the parties that I wanted them to be opened and tested and the apples sold on their merits. To my astonishment and consternation when the returns came I found that the Ben Davis sold for the best money, by nearly $1.00 per barrel. If this was the end of the matter then we could soon settle this question of ideal market apple. But when these apples got into the hands of the fancy retailer we found that 3 or 5 or 7 specimens selected with the greatest care, being nearly perfect, and put into their cute little baskets, nicely draped and dressed up, that the difference disappeared and they were more nearly uniform in price, with the advantage in the other direction in favor of the solid colored apples be it red or yellow. Their prices for these special specimens varied from ten cents each to fifty cents each in a very few cases.

To what then is attributed the difference? Undoubtedly to the condition of the fruit due from packing and selection and shipment and carrying quality. The Ben Davis arrived in the best of condition, the others were more or less slightly injured by their sea voyage. But as outlined above the returns came when the fruit was put up in small packages and made very choice. Many of those people want to buy what is not common, what the middle class cannot buy. What every body can get the wealthy class do not want.

The shipment made to Germany by my friend bought as common No. 1 stock proved a losing investment, while mine was a paying one.

Again at the Paris Exposition I sent about Sept. 1, some barrels of Jonathan thus carefully wrapped and packed and being in cold storage they arrived safely. This apple is the ideal apple if it can only be handled in cold storage all the time. Its beauty sells it, its quality sells it, its condition sells it, no other western apple could approach if it only had the keeping quality, the carrying qualities, the handling qualities of the Ben Davis.

I think therefore the Ideal apple is only grown where some special variety has found itself at home in some particular locality and thus develops its peculiar qualities to a greater extent than usual. Notably is this true of the Gravenstein for some parts, the Baldwin for other parts, the Newton Pippin or the Albermarle Pippin, the King, R. I. Greening, the Winesap, the Ben Davis, the Gano, the Jonathan, the Ingram, as the case may be when they are best adapted to be grown and grown to perfection. No Ideal apple can be grown all over the land. No person has a right to say that such a variety is the Ideal apple unless he says, at the same time, from such a locality, grown on such kind of soil, at such an elevation with such a subsoil. All these tend to give quality, color, size, carrying qualities, etc.

The Ideal apple, therefore, is the one which is peculiarly adapted to a certain soil, will bear handling well, has natural keeping features, has good color, good size, produces well, carries well, of fair to good quality, does not soft rot, will supply the wants of the middle class of Europe, and at the same time supply the wants of the most fastidious aristocrat. This ideal can only be reached by the peculiar adaptation of special varieties to the various soils, climate subsoils and elevation which makes that variety perfect in itself and of much better quality than the general run of the same variety.

When we pass judgment on a variety before we know where it is grown and whether it be grown where it does its best, then we make a mistake in selecting the Ideal apple for foreign markets. This point considered and the carrying quality of the variety makes the Ideal market variety.

11. THE IDEAL COOKING APPLE.

H. E. Van Deman, Washington, D. C.

The Ideal Cooking Apple cannot be grown in any single locality. We have a broad country and we must have not only one variety but several varieties, in order to compass the territory in which this ideal apple must be grown. The tree upon which this apple grows must be a good tree. It must have a good constitution. It must have good foliage as a part of that constitution, and it is the one which will be grown by the nurserymen as well, because the tree that makes an inferior growth as a nursery tree is almost sure never to meet with public favor. Then it must bear good sized apples. Small apples will not make good cooking apples, because we have to pare them. We must have an apple of good medium size, not necessarily large, but of medium size, and it must have a good, regular form For instance the York Imperial is a lopsided apple, that is you could not pare it with a machine, and it is quite difficult to pare by hand, and we might say the same of many others. As to the color, it is not a matter of such great importance as many might think, because a green apple may be just as good as a red or yellow apple. The latter, however, are almost sure to attract the eye and be purchased by the person who is going to cook them. I should prefer that the apple be handsome, but it is not necessary that it should be so. It must be good after it is cooked. Now the apple that is not good before it is cooked is not any better after it is cooked. A great many people think, " Oh, well, it will do to cook." I think that is the veriest nonsense. An apple good to cook is one like the old Fall Pippin, the Grimes, the Jonathan, the Bellflower, the McIntosh. We must have an apple of high quality, in order to have one that is best when cooked. Could anyone who has eaten apple pies made out of Spitzenburg apples ever eat a Ben Davis apple pie or apple sauce? The Rhode Island Greening is all right. The Northern Spy is a splendid apple, but as I say we have no one apple that we can say is the ideal cooking apple for all sections. If I was pinned down to any one variety, I would take the Fall Pippin. We must have an apple that can be had. We must have it grow upon a tree that will bear.

That is the greatest trouble with the Fall Pippin. It is not a very productive tree, but when it is grown it is certainly the Ideal Cooking Apple.

12. THE IDEAL HORTICULTURAL SOCIETY.

W. C. Barry, Rochester, N. Y.

In the few moments that are allotted to me I shall be able to say but little upon the subject.

As I understand it, the purpose of horticultural societies is, first of all, to gain information.

Earnest workers throughout the country assemble at intervals and endeavor to accomplish something by exchanging ideas, reporting experiences and listening to addresses on pertinent subjects, by authorities in the various departments.

I suppose the ideal society will be composed of men who have this idea in view and who will coöperate to bring about the desired result.

It has been noticed that sometimes the members hesitate about taking part in the discussions and withhold information which is worthy of being imparted.

Realizing the purpose for which they are assembled and the common ground on which all meet, each member is expected to do his share towards making the Society a success.

An interesting programme should be arranged with addresses not so long as to become tedious and the question box should be opened frequently, affording an opportunity to all who desire information to obtain it in that way. The discussions which follow will prove instructive and profitable.

A suitable place for the meeting should be provided where the members may be comfortable and where the acoustic properties are such that the speakers may be heard by all in attendance.

The presiding officer must make the best use of the time devoted to the sessions so that the business may be transacted promptly and satisfactorily.

Lastly, the principal duties of the Society devolve upon the secretary ; success or failure depends largely upon him. He must keep up the membership, collect the dues, pay the bills and edit and publish the annual report. Few Secretaries receive the credit which is due them for the work they do.

13. THE IDEAL AMATEUR FRUIT GARDEN.

L. R. Taft, Agricultural College, Mich.

In the class of amateur fruit growers there are two sets of men and there are certainly two kinds of amateur fruit gardens. In the first set we may place those who grow fruit for the sake of securing a supply for family use, and in the second those who maintain fruit gardens for the pleasure they have in working in them and watching the growth of the trees and the development of the fruit. These latter are the true amateurs. As a rule, both classes of gardens are of comparatively small extent, and in many other respects they possess similarities. So far as location, soil, care and general appearance are concerned the ideal gardens of either class will not differ widely, as each will be that best fitted to favor the perfect development of trees and fruit.

As a rule, however, from the very nature of the case, it will be the exception that any of these are ideal. Thus, the garden being usually a secondary consideration, neither the location or soil will be adapted for the growth of fruit, and the care will seldom be perfect. On the other hand, the commercial fruit grower is able to give more attention to securing perfect conditions.

The ideal garden should be located where the climate is favorable for the perfect development of the various fruits to be grown. The location should be somewhat elevated above the surrounding country and the land should be slightly rolling. This will aid in securing soil drainage and will not only lessen the danger from frost, but it will improve the color and flavor of the fruit and reduce the injury from parasitic fungi. All of this will tend to aid in the production of ideal fruit.

While opinions may differ regarding what is ideal care for a fruit garden, it will be admitted that it must be such as will best secure the perfect growth of the trees and the development of high-grade fruit. Ordinarily this may be said to be frequent cultivation during the period when the trees are making their growth, and the sowing of a cover crop with the last cultivation for the purpose of providing humus for the soil, aiding the trees in ripening their growth, and, by covering the ground and holding the snow and leaves, preventing the alternate freezing and thawing and the resulting injury to the roots. If the land is kept in sod it must be naturally retentive of moisture in time of drought, and this must be supplemented by heavy applications of strawy manure, which will both act as a mulch, provide humus and furnish plant food. Even if the soil is cultivated, the fertility must be kept up, at least after the trees come into bearing, by the use of stable manure, wood ashes, or commercial fertilizers.

In the idea garden the foliage and fruit will be free from injury by insects,and fungous diseases, and this can only be secured by spraying the trees from one to three or more times with proper remedies.

It is in the varieties that the principal differences will be found between the two classes of amateur gardens. The man who plants with the idea of securing a supply of fruit for his family should select varieties of known hardiness and which are adapted to the soil and climate. They should be early bearers, productive, and the fruit should be of at least fair size, regular in form, handsome in color and of good quality. While all of the characters mentioned are desirable and should be considered in making the selection of varieties, the quality and productiveness of the different sorts should have first consideration. The true amateur in planning his garden will give even less attention to the productiveness of the varieties, but, in addition to securing fruit of high quality to tickle the palate he will consider also their form and color, choosing such as will also please the eye. He will not confine himself to tested varieties, but will plant the new kinds and patiently watch their development. Not content with this he may give attention to the development of new sorts by crossing and hybridizing, and in order to test them quickly will graft them upon bearing trees.

From this it will be seen that the garden of the true amateur will seldom be ideal from the standpoint of the man who wishes to grow fruit for the sake of the fruit, as many of the trees selected by the former are likely to be lacking in hardiness and vigor, they will be less productive, and in many cases there will be less regularity and evenness in the planting. From this it is quite evident that what will seem an ideal garden to one class of amateurs, will be far from ideal to the other. In fact we may say that as the ideal garden is the one which gives the most pleasure to the owner and his family, and as no two persons will think exactly alike, no two will agree upon what is an ideal garden.

14. THE IDEAL METHOD IN USE OF TABLE FRUITS.

W. R. Lazenby, Columbus, Ohio.

I am something in the position of the fisherman who fell into the river. The water was deep, the current strong, and if a man hadn't happened on the spot he would have drowned. After pulling him out, the man said: "How did you come to fall into the water?" And the fisherman answered: "*I didn't come* to fall into the water; *I come to fish*." I didn't come to speak two minutes tonight. I did come to attend this love feast presided over by my friend Garfield.

I am glad to have this subject of "Ideals," because it seems to me that there is a lack of ideals at the present time. What are the fundamental qualities of an ideal? First, imagination, and second, hope. You must have imagination to know what your ideal is. You have to have hope that the ideal will become real. Those two things are what we should teach our children and the youth. Criminals have little imagination and little or no hope. There are very few of us in this world that can ever hope to become rich. Very few of us expect to have any considerable amount of fame or power. But every man and woman can have high ideals. We can all have a high conception of life. Just a word as to the ideal and proper method of preparing fruit for table use. Like the famous recipe for cooking a hare; you must first catch your hare. I should say, catch plenty of fruit, catch plenty of *good* fruit, catch plenty of good fruit continuously throughout the year. As to the best method of preparing it for the table, I don't know as we have any known ideals. It is largely a matter of taste. I believe, however, that fruit should be prepared as much as possible in the natural form. I believe, with my friend Van Deman that "Cooking doesn't add anything to the value of fruit." We have too much spiced and sugared fruit, too much poor fruit that we eat like a sugar-coated pill. It would be a very hard proposition to prove

WILLIAM A. TAYLOR
The retiring secretary, an able and painstaking officer.

that cooking improves the mere digestibility of anything. Some things are not safe if they are not cooked and many things are made more palatable. It is the only way to preserve some fruits. Cooking, however, is a necessary evil. Eating fruits in their natural form is sometimes difficult. I have heard it said that to eat an orange in a satisfactory way one should go into a room by himself ; pull down the shades ; lock the door ; and then eat the orange as he likes. Well, an orange is a more difficult fruit to manage than some others, but there is no ideal way to eat any fruit. You have all had trouble with grapes and peaches and everything else. If we only had an ideal way I would be very glad to talk about it. We do know that we can eat fruit and enjoy it. We can scarcely eat too much of it if it is good.

15. THE IDEAL IN BLACKBERRIES.

F. W. CARD, KINGSTON, R. I.

Your ideal wife or sweetheart may not be mine. My ideal blackberry may not be yours. In brief, the plant should be hardy, productive, thornless ; should sucker but little, and should be disease resisting. The fruit should be large, glossy, long, of even sized drupelets, fairly large, sweet but sprightly, to be ripe when black. Furthermore, this ideal blackberry should be grown in an ideal garden by a man who loves fruit, who will appreciate its needs and bring it to perfection, and it should be prepared by the hand of an ideal wife or daughter in an ideal home—a country home,—the peer of any home in the land in intelligence, refinement and beauty of surroundings, the inmates of which shall love country life, appreciate the beauty of fruits, flowers and plants, and believe in the dignity of their calling.

16. THE AMATEUR POMOLOGIST.

W. A. TAYLOR, WASHINGTON, D. C.

What a diversity of effort and accomplishment the word amateur suggests! From the day when man first found leisure to devote a share of his time and energy to other ends than the mere maintenance of existance there have been amateurs. And who shall compute the share that the world owes to these in every important field of human activity, the men who have worked not merely for meat and drink and raiment but also " just for the love of working" along some congenial line. Evidence of the great value and importance of the work of the amateur is found on every hand. Many of the great discoveries and inventions have resulted as incidents in the work of investigators who were not seeking commercial ends, but who, in exploring interesting bypaths, have opened to the world broad highways of industry and commerce. The toy of one century, or even decade, becomes the drive-wheel of great industries in the next, upon which thousands depend for daily bread. For if we investigate the history of invention and discovery we shall find that many, if not most of the epoch making steps of progress have been made by those who worked for *love* of some one thing or other rather than for mere covetousness or desire for worldly gain. And what is the amateur either etymologically or when personified, except a "love-worker."

It appears to me that in these days of the reign of kodak photography and similar diversions to which we have applied the term, we are in danger of losing sight of the real significance of the good old word "amateur," as applied in pomology and elsewhere in horticulture. There doubtless is an impression on the part of some that an amateur fruit grower, or gardener finds his chief delight in chasing impractical and expensive horticultural phantoms into intricate and impassible mazes of botanical doubt and biological despair. These would have us to believe that the amateur is of necessity a worshiper of the abnormal, a devotee of the odd in plants and trees. That he would very much prefer to cultivate a "bloomless" apple or a peach that bears its fruit underground, to such as proceed in the normal way. There may be such. The fact that our friends, the traveling dispensers of tree strawberries, walnut-rooted peach trees and seedling pecans that bear full crops of nuts as large as hen's eggs, within a year or two after planting, are still doing a fairly profitable business in widely separated regions of the country, would indicate that there are. And the most surprising feature is that these rascals with glib tongue and brilliant plate book, still find about as many customers among the dwellers along the paved street and the boulevard as in the mountain cabin or the prairie dugout. Perhaps it is true that we like to be humbugged. If so, we have a reasonable explanation for the continued, though let us hope waning existence of this type of amateur.

There is a tradition that there was at one time a type of amateur who found his chief enjoyment in excelling his neighbors in the size or abundance or earliness, or what not of his flowers or fruits, and that he resorted to all sorts of mysterious and peculiar devices to accomplish this coveted result. He might have been in worse business. Let us hope that he found his reward.

But the ideal ametaur—the "love-worker" in pomology—where shall we find him and by what sign shall he be known? Let us broadly sketch his stronger features leaving the picture for each to supply the crow foot, the eye winkle, the friendly word or cheery laugh, to suit his individual fancy.

He must love nature and be willing to give up certain other pleasures before she will yield to him her secrets and permit her children, the plants and trees, and even the birds and the insects, to become as clay in his hands, to be shaped as his intelligence may direct and his patience and persistence compel. The sacrifice required may be that of the last dreamy nap in the cool of early morning, which is so dear to many of us. It may be the grateful siesta of a hot summer noon, when spraying or hoeing or other of the hundred prosaic operations that now constitute the mechanism of gardening need attention. He will agree with Charles Dudley Warner, that "Neither persons nor plants are ever fully themselves until they are cultivated to their highest." He will make these sacrifices cheerfully because he realizes as Warner has so tersely stated—

"It is not simply beets and potatoes and corn and string beans that one raises in his well hoed garden ; it is the average of human life."

If he were not our *ideal amateur* he might have to spend many weary hours at times in combating those blessings in deep disguise, our friends the insect and fungous enemies of plants. He will, in fact, rather enjoy than deplore them for he knows that they are also laid in like weight upon the other fellow.

He must love truth and be able to recognize it and appreciate its importance and to make it known when discovered.

Perhaps no harder test than this is encountered by the amateur—"What is the true value of this variety?" The intensity of his interest in his favorite varieties, especially in those that have originated with him, sometimes distorts his vision so that he sees their merits in heroic proportion while sight is dim to their defects. Our ideal amateur will continually be comparing his favorite sorts with others within his reach, and will continually strive for better things. He must combine in one the earnest, constructive spirit of the advocate with the penetrating and discriminating analytical temperament of the upright judge, in order that his conclusions when reached may be correct and of benefit to his community and the horticultural world at large.

I fear that we fail to appreciate in these days of experiment stations and other public agencies engaged in the investigation of horticultural problems, how great a debt we owe to the pioneer amateurs of the country, who at great expense of time and well directed energy, as well as money, brought to this new land the fruits of foreign climes, and by careful, persistent, painstaking effort, eliminated those that were deficient in quality or poorly adapted to our conditions. Thus narrowing the list of varieties worthy of planting in given regions to comparatively few sorts, they removed the necessity for each beginner to traverse the ground again and gain all his knowledge in the school of experience. They did far more than this, for, recognizing the better adaptability of seedlings, grown under the new conditions, they quickly developed by selection from self-and hand-sown seedlings the material for a broad and expanding pomology, which in many lines is destined to lead the world.

Our ideal amateur must love his fellow men and share the results of his labors with them. After ascertaining the truth regarding a variety or method of culture, he will consider it his duty to make the results known to his neighbors. The high stone wall, the tight board fence and the locked gate for the garden, the orchard or the greenhouse, have no place in his scheme of equipment. Who shall say how much of the remarkable development in horticultural lines in America in recent years is due to the generous policy adopted long ago by the founders of this and similar societies in giving to the world at large, without cost, the benefit of their experience and deliberations!

But having his portrait in outline before us, where shall we seek for our ideal in the flesh? Look around you. In one or another of his phases, with the features more or less symmetrically developed he exists and dwells among us from north to south, in city and in country. He may be a banker, devoting his spare mornings to his greenhouse, garden or orchard; or a preacher, finding in that touch of nature which makes the whole world kin, the inspiration which impels him on his mission among men. You may find him on the bench or before the bar. You will find some of the closest approaches to the full and symmetrical ideal in the nursery or the commercial orchard, where the grinding necessities of business competition have not dulled the edge of the amateur spirit. Many times you will find these qualities exemplified in the gentler sex, in garden or sitting room, or kitchen. Often you may watch them bud and swell and burst into full and luxuriant growth in the life of some little child whom you know. Locate this concrete example and when found acquaint yourself with him for he has the capacity of becoming such a friend as Emerson has characterized "the masterpiece of Nature."

17. WHAT A POMOLOGIST MAY THINK IS AN IDEAL MENU FOR ALL.

By Charles A. Green, Rochester, N. Y.

I eat fruit for breakfast, for dinner, for supper; also midway between the morning and the noon meal and between the noon and the evening meal. I eat nuts in moderation at breakfast, dinner and supper. I have difficulty in getting my family to eat fresh ripe fruit as I do. I bring in baskets of superior apples, peaches, grapes, etc., and say to my wife and grown up children, now hurry up and eat these for they will not keep long, but they will not do it and the burden is left almost entirely with me. Their reply is that fruits take away their appetite for other food which they prefer.

People like to eat fruit when they can take it directly from the tree or vine. Those who drive into my Rochester grounds cannot get past the cherry trees or the grape vines that bear fruit near the driveways. There is a Sweet Bough apple tree near my dwelling. Carpenters, masons and painters at work near there this summer made large inroads into these apples, as did the boys and girls of my neighborhood. The two hundred members of my golf club never in playing around the links, miss picking up one of the red apples that has fallen from the tree on the grounds, and yet if they had these same apples on their tables at home they would seldom touch them. They are sour and not of fine quality. These men are doubtless reminded of their school days when the apples in the neighboring orchards were so tempting. The people of this country have not yet learned to eat fruit abundantly. They have not learned the value of fruit as food. When they do learn this the medicine men will hang themselves, and the acreage planted to orchards will be inadequate to meet the demand. A man recently walked one hundred miles in twenty hours subsisting substantially on grapes, pears and melons. I cannot imagine a man starving when he is in the midst of a bountiful supply of fruits and fruits alone. If a ship laden with apples, pears or bananas should be wrecked on a barren island, and the fruit should be saved from the wreck, I should have no fears of those people starving so long as the fruit lasted, although they had no other food.

Why do not our people make more use of fruit as a dessert? In the first place they are not thoughtful; they do not appreciate the value of fruit as a dessert; they have but little skill in selecting fruits of superior quality; they do not appreciate the value of fruit as food. Not knowing one variety from another, or which is best in quality, they select that which pleases their eye. This fruit, being picked before maturity, or being naturally of inferior flavor, is used mainly to ornament the tables. The man who sells a basket of grapes picked before fully ripe, or sells to a family or hotel baskets of Kieffer pears does an injustice to growers of fruits of superior quality, since those who eat his fruit are discouraged from buying or eating more.

Most people eat too much meat and other similar hearty food. If they would eat fruit as a first course at their meals it would tend to prevent over-eating, and thus decrease the death rate ten per cent. at least.

The fruit stores of our cities teach us a lesson in preparing fruit for the table. They prepare baskets of mixed fruits which are very attractive by their combinations of colors and forms. Let us follow their example upon our tables.

18. THE IDEAL TEXT-BOOK FOR THE FRUIT GROWER.

F. A. Waugh, Amherst, Mass.

In the first place I want you to notice carefully the form in which this subject has been proposed by the Chairman. It is the "Ideal text-book for the fruit-grower." Now a text-book is written for people who want to learn and belongs commonly in schools and colleges. The term appears to have assumed that the fruit-grower also wants to learn and that he is willing to put himself in the position of the student. This seems to me a fair assumption and it puts us on the right track at once. The ideal fruit-grower, of whom we have just been hearing, is in fact the man who studies and who expects to learn; and the good text-book is the one which will be of the most use to such a man.

Now there are many things that can be put into a text-book and some things that can be profitably left out. I suppose that a text-book ought to have a certain amount of information in it. I am not positively sure that that is necessary, but it is one of the things commonly supposed to be essential. I do not believe however that it is the main thing. Information is of no particular use by itself. It takes a man to make use of information. There are a great many words in the dictionary, yet a man may read it through faithfully without ever becoming an orator. There is a great deal of horticultural information in circulation, but it takes a wise man to apply it to any purpose.

We have been told by a man who is most successful in writing horticultural text-books that they should contain not facts, but principles. Yet this statement does not go far enough. Principles are dead of themselves. Taken alone, principles are of no more use than facts. It takes a man to make use of principles just as much as it does to make use of information. Principles may be put into an encyclopedia and arranged in alphabetical order, but that would not make a text-book.

In the text-book there must be a proper arrangement of facts and principles. The encyclopedic arrangement will not make a text-book. This seems to me to be a matter of chief importance. The facts and principles need not be so critically tested. It is necessarily more proper to pay chief attention to the character of the information used—or of the misinformation, which is what I commonly use in my books. I get the misinformation wherever I can—from President Hale and others—but the arrangement I stand responsible for myself. I look after that because I think it is the matter of first consequence.

Facts and principles become intelligible and useful only when they are brought together in their proper relationships. That is why the arrangement of a text-book is the point of chief concern. After an intelligent man has tested the principles with which he deals and has been able to clarify and arrange systematically the information which he possesses, he is thereafter able to make use of it all when the need comes. A good text-book is useful because it helps a man to do things—to clarify and arrange systematically what he knows on any given subject. Thus it opens up the man's mind and makes him brighter and stronger and better.

19. THE IDEAL FRUIT GROWER'S HOME.

JOHN CRAIG, ITHACA, NEW YORK.

You have heard Bro. Hale I think tell you the story about the small colored boy in the South who was chased by the overseer for stealing fruit. He ran around the corner and came upon an empty sugar hogshead into which he hastily took refuge. Seeing the abundant coating of sugar crystals his thoughts took the form of the old hymn, the first line of which runs: "Oh, for a thousand tongues!" This is my wish tonight when I realize that my topic, "The Fruit Grower's Home," must be treated in five minutes.

Let me say that there is a wave of improvement influencing the æsthetics of our homes, sweeping over the country affecting both farmers and fruit growers. In the rural districts, the individual home is the unit and an element of great sociological importance. The fruit growers of the country have an important part in keeping up the standard of æsthetics in our homes.

Let us consider a few essentials: we should select a site which is elevated and commanding. I know of a man who has a home on one of the finest vantage points overlooking Lake Michigan. He has one vista of surpassing beauty. If asked to sell, he would put a price on that view and throw the house in! The view takes his mind away from the arduous toil that comes to him every day and brings him mental quiet.

What style of architecture shall we select? Let us have it plain, dignified. We will not mount a rooster or a tower on the roof, nor place frills beneath the veranda. The lines will be simple, not severe, but befitting the natural surroundings.

How shall we arrange the interior? I don't wish to paint a picture sumptuous or luxurious, but we should think of the person who lives in that home seven-eighths of the time. We should plan our home to save the steps of the woman—the resident guiding genius of the home. Don't build a house so fine that she must live in the kitchen, leaving the musty, "whited sepulchre" unoccupied at the other end. Let us have a home in which we live throughout. The day has come when the farmer can have a home that vies with the city home in comfort. He may have hard wood floors. Let us hope that he doesn't have an abundance of cumbersome hangings and dust-catchers. Let us hope that he will think about his wife's comfort and put in a furnace. It is economical in the long run. Let us hope that he will think of her and put in a lighting plant, which is indeed economy and which is now found in so many of our country homes. With furnace, lighting plant, the rural telephone and rural mail delivery, have we not a maximum of conveniences without the distractions incident to city living? Our home should have one commodious living room with a large fire place, around which the members may gather for family reading and family intercourse. This room is consecrated to character building.

The exterior of the home: Let us think of the building as the central figure of the picture. Let us make our canvas of beautiful greensward, and let us have our house back from the road, because the time has passed when for companionship's sake the house was planted on the road side. Let us frame that picture as neatly and artistically as our means will allow us by placing our flower borders on the boundaries. Drape the veranda with vines. Do it lightly, artistically; do not smother the windows. Now, I should like to go outside of the lawn, and the garden, and the flowers, and say a word, which, after all, has more to do with the home-making than anything else. The fruit grower's garden should be an essential part of his home. Of course his house will be supplied with vegetables in season, which are not his alone, but his family's. I like the idea of every member of the family having a fruit tree which is his or her very own. I like the idea of having twelve fruit trees, if there are twelve in the family, and each one named for a member of the family. Then Mabel, Jack, Jill and Jim should take care of the tree which belongs to them. Let the product belong to each child as well as the tree. You have heard of the calf that belonged to the boy, John, but somehow grew up to be father's cow; and the colt which was Billy's, but grew up to be father's mare. In other words, may not the garden, the flowers and the home belongings be a means of unifying home interests and engendering a deeper affection for family ties as well as nature's creations?

Now, I have in this brief interval painted perhaps a superlatively high ideal, but in the majority of cases by no means unattainable. Lest you should think it too high, allow me to simply refer you to the sound Emersonian philosophy, which admonishes you to "Hitch your wagon to a star."

20. THE IDEAL OCCUPATION FOR THE DECLINE OF LIFE.

H. W. Collingwood, New York.

We may divide a man's life into three periods. Youth is the time for preparation—we may call them the years of brass. The years in which a man puts up his best fight against the forces that would crush him are the years of steel. The later time of life, when white hairs show that reflection must take the place of action, may well be called golden years? What shall a man do with his golden years? That question may well haunt the man of middle life. The ideal life is one in which these periods follow each other gently and orderly. Nothing seems more out of place than the young man rushing into the real fight unprepared, or the old man trying to hold his place still while it is evident to all who see him that his best day's work has been done. Yet no man of active life feels like sitting idly, with folded hands without work or ambition. The great tragedy of life often comes near its close in the effort to find something to do, that shall calm the disappointment that comes with wasted powers and give something of God-like preparation for the future. There is no contest with natural forces that can equal some line of horticulture for this work. The spectacle of a man near the close of life starting a young orchard has something of the sublime about it. The old man renews his youth in the trees. As he trims and directs them it seems to him as though he has at last been given the chance to revise his own life and prune out the errors. He is putting spirit and love and power into his trees and while his earthly powers may decline, the truer part of the man develops with the trees into fair and noble proportions. Far better to give shape and character to a tree than to grieve and sadden as the end draws near. And let us think what the old man leaves to those who follow him in his trees. A stately trunk and branches that reach grandly out like the hopeful promise of a well spent life ; leaves that rustle music and inspiration with every wind that blows ; fruit that may carry a blessing and comfort to distant lands. There are hill sides and rough places which strong men in other days abandoned. The times have now so changed that the old man who has lost the power of youth may save these hills and make them doubly profitable by planting them in orchards. If the man who thus saves an abandoned farm can save an abandoned child to care for it after he has passed away, he leaves behind him the worthiest example for man and the holiest tribute to God that a human life can well devise.

The Chairman : Just one word now—in all these ideals, my friends, there is one thought I would like to introduce into every one of them and that is the thought of carrying with them a religious ideal, for we who deal with these beautiful things are dealing with the things that come directly from God, so let us treasure this thought, and in so far as we can,gain religion from our horticultural ideals.

Mr. Barry : I think we are all indebted to Mr. Garfield for having originated the idea of this entertainment, and I will make a motion and put it to vote, that the thanks of the Society be tendered to Mr. Garfield for this very pleasant entertainment.

The motion is carried.

Adjourned until 9.30 A. M.

SATURDAY MORNING SESSION.

SATURDAY, Sept. 12, 1903.

Mr. Watrous in the Chair: Mr. Wyman Elliot of Minnesota will give us an account of an apple exhibit, which is one of the most interesting and inspiring I have ever seen at any meeting of this Society.

BREEDING APPLES IN MINNESOTA.

WYMAN ELLIOT, MINNEAPOLIS, MINN.

The proverbial New England apple pie was in a measure responsible for the first inception of this experiment in apple growing. One April morning in the spring of 1893 Mrs. T. E. Perkins was preparing some Malinda apples for pies and noticing some sprouted seeds the thought came to her, why not plant these seeds and grow an orchard. When her husband came into the house she made a proposition to him: if he would prepare the ground in the garden she would plant some Malinda apple seed, and weed and hoe the young trees, to which conditions he agreed, and at the end of two years she turned them over to Mr. Perkins to plant out in the orchard. One hundred and twelve trees were planted twenty feet apart on a knoll of ground sloping gradually to the south, southeast and southwest. This ground was sheltered by a wind break of trees on the south and east, and the ground was given clean cultivation for five years and then seeded down to red clover. Thirty-two of the trees are still growing in the nursery row and thirty have been planted in the old orchard to fill vacancies where trees have died. The first trees to produce fruit were in 1900—only here and there an apple. In 1901 a few more trees produced a few apples. In 1902 about sixty trees fruited, some trees a few apples, while there were ten or fifteen trees well loaded with fruit of fair size. Goodhue County made a county exhibit of grain, grasses, fruits and vegetables at the Minnesota State Fair in the fall of 1902; and apples from this orchard were secured which in the main made up their fruit exhibit. My attention was called to this fine collection of seedlings of about forty kinds, many of them equalling cultivated varieties. I gave particular attention to their examination and invited as many of those interested in the growing of apples to inspect this fine collection of seedling apples as possible, and when the fair closed I had secured permission from Mr. Perkins the grower to pack them and put them in cold storage to be used at the meeting of the Minnesota State Horticultural Society in December.

At that time Mr. Perkins added a few more varieties and a few duplicates fully matured, showing a marked improvement when fully ripe. After our fair closed I went to visit this young seedling orchard and was agreeably impressed with the fine healthy growth of the trees in each location. The foliage, habit of form and general appearance of the trees was very satisfactory. There was no indication of injury to the trees from any cause; the limbs were well shouldered to the bodies of the trees; the stems of the trees smooth with no indication of sun scald or blemish.

This year, in August, I visited the orchard again with Prof. S. B. Green and J. M. Underwood of the Jewell Nurseries, and we were all well pleased. We found many of the trees loaded with fruit so heavily that the limbs had to be propped up. There was some indication of blight which was not to be wondered at as this has been one of the worst for blight in several years.

There have fruited this year one hundred and thirty-two trees out of which we have here on exhibition one hundred and nine kinds, representing early fall, late fall, early winter, and late winter. There are forty-four more trees that have not yet produced fruit.

At our Minnesota State Fair this year Mr. Perkins exhibited the finest collection of seedling apples ever put on exhibition from one person at our fair, yes, I will say from all exhibitors combined.

Our Minnesota State Horticultural Society has sent me here with this collection of seedling apples for you to pass judgment upon, hoping that you may indicate how this Minnesota farmer has outstripped us all with the seedlings from one Malinda tree crossed with Duchess, Wealthy, Haas, Perry Russet and Tetofsky trees standing nearby, showing the prepotency of the Malinda in this collection of seedling apples in shape and in many instances in the quality. The coloring of the fruit, shape of leaf, in a large majority is from the pollen side of these crosses.

The President: I think it remarkable that that fine exhibit is from the seeds of one tree. Now who shall say that it is wrong to urge that other people do likewise? And we ought to have not only hundreds but thousands and millions of seedlings and then out of them all select the best. There is a wonderful promise for the future of American Pomology, if that can be brought about.

POMOLOGY AT THE ST. LOUIS WORLD'S FAIR.

F. W. Taylor, St. Louis, Mo.

The prominence to be assumed by pomology at St. Louis will depend upon two most important factors:

First,—The provisions made for pomology by the management of the Exposition and Second,—the provisions made by the horticulturists and particularly by the various State commissions for a full varied and accurately named exhibit of fruits, so planned as to cover the entire period of the Exposition from Apr. 30th to Dec. 1st. I will speak of the two phases of the subject in the order I have named:

The provision made by the exposition. Before speaking of the amount of space being built for horticulture, it will be well to call attention to an important departure, in the classification from the usual American arrangement. At St. Louis all wines and liquors, the products of fruit are classified, not in horticulture but in the section of foods and their accessories, in agriculture. In the same section are classed all kinds of canned goods, preserves, jellies, marmalades, dried fruits, prunes, raisins, etc. This leaves available for pure pomology a much larger proportion of the horticultural space than has heretofore been the case.

The Horticulture Palace, as it is officially called at St. Louis, covers six acres of ground, being entirely without galleries intended for exhibit purposes. Of this space two-thirds or four acres will be devoted entirely to exhibits of fruits in their natural or fresh condition.

This is twice as much space as has ever been provided at any Exposition in the world for a similar use, and is a larger proportionate increase in the amount of space provided than has been given any other section of any department. Not only is a larger space placed at the disposal of the pomologists, but it is better arranged, better lighted, and in every sense more available. There are no ordinary skylights, all light from above being admitted through "monitor windows" which do not permit the direct rays of sunlight to reach the exhibits. The wall windows are set high from the floor, so as to admit a flood of light clear to the centre of the building, and at the same time leaving the walls available for exhibit uses. Further, the pomological exhibit room is exactly square, permitting such installation as will provide an opportunity to take in the exhibit as a whole, adding materially to its impressiveness.

A large basement has been constructed, in which all fruit can be unpacked and prepared for the tables, doing away with the necessity of carrying on much unpleasant and unsightly work in the exhibit space. In short, for the first time, the horticultural building has been erected around an exhibit idea instead of an architectural idea, and at the same time the architecture has in no way been injured.

All this change from previous examples of exhibit construction did not come about by accident. From his first appointment the Chief urged the necessity of planning it for utility. Attention was called to the provision made for pomology at the last Paris Exposition where all regular exhibits of fruit were shown in what was well adapted for a conservatory in which to show plants but where fruits as well as those in charge of it, soon wilted.

Reference was also made to Chicago where the fruit was shown in two long narrow rooms entirely separated from one another, making any general view of the whole exhibit entirely impossible. Fortunately, the plans for this building were prepared by the Division of Works of the Exposition, where there was a willingness to build with reference to the use to which the building is to be put.

When an architect is assigned a building at an Exposition he usually becomes at once impressed with the importance of erecting a splendid monument to himself, with little or no regard for the utilities. A fortunate incidental circumstance is that there are several modern cold storage plants in St. Louis where may be sent fruits of the present year's crop with the assurance that it will be kept in the best possible condition until needed. Thus, through a fortunate grouping of circumstances, it has come about that the facilities provided by the Exposition for pomological exhibits are the best ever available.

We may therefore now consider what the pomologists may do for the Exposition, or rather what they may do for themselves, using the Exposition at St. Louis next year as a means. One important way in which many are planning to do something notable is by having stored as it ripens, sufficient fruit of the present year's crop to provide a complete exhibit during the early days of the Exposition, of all such fruit of the crop of 1903 as can be held over by the use of the most improved methods of refrigeration.

Some of the fruits are already in store at St. Louis, awaiting the day when they shall be taken out to gladden the hearts of the beholders who may no doubt be expected to show great surprise at what has been prepared for them in pomology.

Another phase of the exhibit of fruits which can be materially improved is in the matter of correct naming and labelling of varieties. The rules will require that every plate be correctly labelled in such a way as to give every passerby an opportunity to learn much that has before been in a sealed book.

Many exhibitors do not appreciate the desirability of showing, not only those species and varieties that are comparatively common but the unusual and particularly the unexpected as well. The range of many varieties is much greater than most of us realize, and should be fully shown.

One important way in which the management wishes the coöperation of the exhibitors is in bringing together on some central tables to be set aside for that purpose, samples of all the varieties of fruits in order that they may be studied with reference to the effect of soil, climate, moisture and other local conditions upon the size, form, color and quality of fruit. A table of Bartlett pears or Ben Davis apples, showing specimens grown in twenty or more states and countries, would show some astonishing things to one who had never thought much on the variation of fruits under various conditions.

What I have said will no doubt bring to your mind many other ways in which the pomologists and the Exposition may be mutually helpful. We can do nothing without you and you can render an immense amount of assistance particularly as individuals by keeping in close touch with what your respective State Commissions are doing.

In many states having appropriations for the Exposition, no sum has yet been definitely set aside for Horticulture and no Superintendent for that department named. Not a day should be lost in urging most insistently that these arrangements be completed at once in order that the autumn, and particularly the winter apples, and other fruits may be selected when at their best, properly picked, packed and stored so that the very best results possible may be obtained.

A number of states have already arranged for placing from a hundred to seven hundred and fifty barrels of apples in storage this fall. Those states which have not yet made definite arrangements will "Have to hurry." There are applications on file for about 50% more space than is available, showing the great interest being taken in pomology as it is to be presented at St. Louis.

It is our sincere desire to make such a presentation of the subject as shall make it worthy of full and complete record as a faithful picture of the condition of pomology at the time of holding the first world's Fair of the Twentieth Century.

Prof. Waugh: It seems to me that the suggestion which Mr. Taylor has made ought to be taken up by the Society. I have been very much impressed with the efforts which are being made to provide a good installation for Pomologists there, and it seems to me that if it is possible at all to have a regular or special meeting of the Society in the hall which Mr. Taylor tells about, we ought to do it, and so I move that a special committee be instructed to consider the matter, and see if it is feasible to hold such a meeting next year.

The following resolution was moved and adopted:

Moved that the executive committee be instructed and empowered to provide if possible for a meeting of the American Pomological Society at St. Louis in 1904 in accordance with the invitation of Mr. F. W. Taylor, Chief of the Department of Horticulture of the Louisiana Purchase Exposition.

Secy. Taylor: It is proposed by those interested to hold a conference of plant and animal breeding societies, at St. Louis during Convocation Week.

Moved by S. A. Beach, "That this Society favors the proposition of a conference of plant and animal breeders at St. Louis during convocation week, 1903, adopted." Adopted.

WASTE OR REFUSE IN APPLES.

W. R. Lazenby, Columbus, Ohio.

In a somewhat extended study of the comparative qualities of different varieties of apples I was greatly impressed with the small amount of refuse or waste shown by this well known fruit. By refuse or waste I mean a certain proportion of inedible material such as skin, core, seeds, etc., together with the edible material that is usually rejected with the removal of the inedible parts.

I had just been investigating the waste in grapes, peaches and plums, not to mention various tropical and anti-tropical fruits, and the difference in favor of the apple was so marked as to cause me to become a more enthusiastic member of that somewhat mythical, but effective organization known as the "Apple Consumers' League."

Examining from three to six well selected specimens each, of some 25 standard varieties of the apple, apples that had been grown, harvested and stored under up-to-date modern methods, I found the necessary refuse or waste less than that of any other fruit I had studied.

The apples were weighed separately, then the skin and core carefully removed, with an ordinary kitchen knife, weighed and the percentage reckoned. I will not weary you with tables of statistics, these can be published and examined at leisure. It suffices at present to state that of the 25 varieties examined the lowest percentage of refuse or waste was 8.6 per cent. and the highest 14.9 per cent. The average of 25 varieties was 11.06 per cent. The percentage first named was found in the variety known as Fallawater, while the latter, or highest percentage, was given by the Rambo. In referring to tables giving the average composition of common American food products, I found the refuse or waste of apples given as 25 per cent., or one-fourth of the gross weight. This is more than double the average I had found in good apples and it seemed too high.

Assuming that the percentage given in the tables referred to represented the waste of average samples of apples as found in our ordinary markets, I determined to test the poorest specimens I could find offered for sale in the city of Columbus, Ohio.

As before 25 varieties were used in the test. These were treated in the same way as the others, that is, the skin, core, seeds and all inedible parts, caused by insects, fungi or accident, were removed, carefully weighed and the percentages reckoned.

The average waste of the 25 varieties thus selected was 23.6 per cent. The extremes being 17.9 per cent. in Smith's Cider, and 39.2 per cent. in the Jonathan.

It will be seen that the above average, even when the poorest salable apples to be found were selected, is considerably less than the 25 per cent. that has been commonly stated as the amount of waste in apples in dietary tables of food products. I wish to reiterate and emphasize this just claim for the apple, that the necessary refuse or waste is very small, less than that of almost any other fruit.

Besides the so-called refuse, the contained water is usually classed among the non-nutrients or waste in food. Excluding the refuse most of our food products are valued on the basis of the dry matter they contain. The standard of milk is gauged upon the percentage of its solid contents.

Good, average milk is about 87 per cent. water, and if this percentage of water is increased the food value of the milk is proportionally diminished. So it is with the most of our food products. Fruits, however, are an exception to this general rule. Many of our fruits contain as much water as average milk, and it is the best samples of fruit that contain the most water. Last winter I tested the water content of 20 different varieties of apples using the most perfect specimens I could secure of each variety. The experiment was conducted in the month of January, and all of the apples used had been kept in cold storage.

They were all sound and above the average size for the variety. The varieties used were Belmont, Rambo, Smokehouse, Wagener, Shackleford, Peck's Pleasant, Sweet Russet, Grimes' Golden, Arkansas Beauty, Greenville, Belleflower, Newton Pippin, York Imperial, Gano, N. W. Greening, Fallawater, Baldwin, Ben Davis, Bismarck and Bortz.

Of these the first seven named were quite ripe and mellow, but not mealy. The remainder were well matured but solid. The samples were taken by thinly slicing the whole diameter of the apple without removing either skin or core.

The samples of each variety were then put in a drying oven where they remained for three weeks at a temperature ranging from 132 to 148 degrees centigrade. When removed the samples were very crisp, slightly charred, and the weight nearly uniform for several days. After determining the loss in weight for each sample, it was found that the average per cent. of water for all the varieties was 89.5. The highest per cent. was 91.41, and the lowest 87.90. Six of the 20 varieties showed over 90 per cent. of water.

One could scarcely say that the percentage of water has much to do with the comparative quality of varieties for the Ben Davis had 90.24 per cent. and the Wagener 90.63 per cent. On the other hand one can affirm with confidence that none but the very best apples of the variety will show 90 per cent. or more of of water.

With apples of the second grade the per cent. of water falls to 85 or below while small "runty" specimens not infrequently show a water percentage of less than 80. The same holds true with "cull" peaches and "nubbin" strawberries. It is therefore a perfectly safe proposition to affirm that when normally grown, the higher the percentage of water, the better the quality of the apple for its kind.

Why does an increasing percentage of water improve the quality of the fruit? Let us briefly consider. The two qualities that render apples wholesome and cause us to have a natural appetite for, and hence to enjoy them, are their acid juiciness and flavor. The juice is mainly water, but it contains the sugar and acid of the fruit, and if these are present in large quantities, and in the right proportion, this water or fruit juice is agreeable and refreshing. Let me repeat: a large amount of acid and a large amount of sugar, together with an agreeable flavor is what gives quality or richness to nearly all kinds and classes of fruits.

Take a glass of pure, cold water, add a small quantity of the acid of the lemon, and a small or at least disproportionate amount of sugar, and the water is spoiled for most tastes; but add more lemon juice and more sugar, getting the proportion of each just to your fancy, and you have an agreeable drink, a beverage of good, rich quality. So it is with fruits. Plenty of acid and sugar in the right proportions give to them richness and character.

In addition to the acid and sugar, flavor adds much to the quality of fruit. Fruit flavors are due in part to the sugar and acids already mentioned, but more largely to certain volatile oils and aromatic ethers. It is to these oils and ethers that those delicate, definite, characteristic flavors of different varieties of fruit are chiefly due. It is by these we tell a Northern Spy from a Belleflower, or a Rhode Island Greening from a Grime's Golden. I trust enough has been said to show that the high percentage of water in apples is a positive advantage and that apples of the highest grade in each variety are those that have the most water.

REPORT OF COMMITTEE ON FRUIT EXHIBIT.

The Chairman: Dr. Hexamer will present the report of the committee on the award of the Wilder Medals.

Dr. Hexamer: I would like to call your attention to this exhibition of fruit which in many respects is one of the most interesting, if not the largest, in the history of the Society. The excellence of the individual exhibits is something exceptional. There is hardly a poor specimen in the whole lot. They are all typical, finely developed specimens, and the exhibits are gotten up with an extreme degree of care. Then the color of the western and northern fruit is quite a story in itself. It shows the effect of the climatic conditions. The fruits from Canada are something fine as are those from the Western States. Then there are other exhibits which are exceptionally pleasing, among which should be mentioned that collection of pears from Marshall P. Wilder's orchard. This exhibit was brought here by his son, Edward, and it reminds one of the Pomological Society fifty years ago when he showed hundreds of varieties of pears, and to see this exhibit now is like turning back pages of history; then there are pears from other places which are of great promise, besides tropical fruit. Perhaps one of the most valuable exhibits is from California. This is the first time the spanish almond has been brought to America, and they are here on exhibition. There was some doubt about its being the real almond (they were imported from Spain at great expense and grown here, and sent back again to be proved that they are the real ones). Another exhibit that is very interesting is the grape exhibit. This is a great period of Pomology in America. There are many other features which I might point out, but you ought to see them for yourselves before leaving this hall, if you have not already done so. Prof. Craig will read the report.

Prof. Craig: I would say that these exhibits are not pitted against each other; they are placed upon their own merits and in this way are passed upon by the committee.

WILDER SILVER MEDALS AWARDED.

Minnesota State Horticultural Society (Wyman Elliott). For an exhibit seedling apples produced in Minnesota.

Miss E. Jackson Clark, Pomfret Centre, Conn., by John Ash, gardener. An exhibit of hot house grapes, pears and melons.

Experiment Station, Michigan Agricultural College. A collection of fruit.

New Hampshire Horticultural Society (C. C. Shaw). A collection of apples.

G. P. & H. W. Miller, Pawpaw, W. Va. Collection of fruit comprising apples, pears, peaches.

Ellwanger & Barry, Rochester, N. Y. Collection of pears, apples, grapes and plums—300 plates.

Edward B. Wilder, 90 Columbia Road, Boston, Mass. Collection of thirty varieties of pears grown on the homestead of Marshall P. Wilder.

West Virginia State Horticultural Society (Fred E. Brooks, Sec'y), French Creek, W. Va. Collection of apples.

BRONZE MEDALS.

C. C. Shaw, Milford, N. H. Collection of apples.

A. A. Boggs, Waynesvile, N. C. An exhibit of Avocados (Alligator pear) grown in Florida.

Grand Rapids Fruit-Growers' Association, Grand Rapids, Mich. Collection of fruit.

Horticultural Department, Wisconsin Experiment Station, Madison. Collection of seedling and named varieties of native plums.

C. A. Arnold, Arnold, Me. Collection of apples.

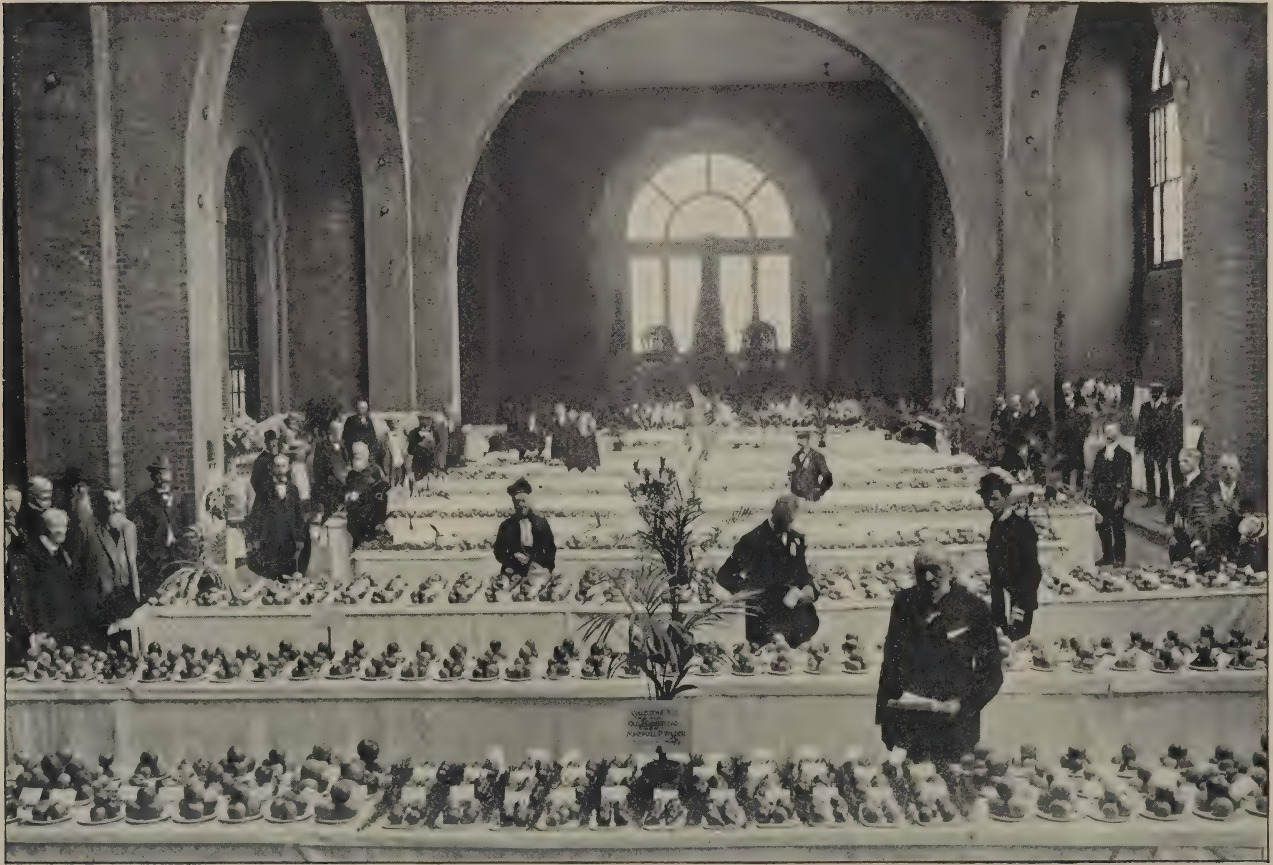
Wm. Craig & Son, Abbotsford, P. Q., Can. Collection of northern-grown apples.

John Rock, Niles, Cal. Sample of Jordan almonds grown in California.

EXHIBITS HONORABLY MENTIONED.

Benton Gebhart, Hart, Mich. Collection of fruit.

Minnesota State Horticultural Society. Collection of commercial varieties of apples.



FRUIT EXHIBIT IN HORTICULTURAL HALL, BOSTON, SEPT. 10-12.
[Dr. Hexamer, Chairman of Committee on Awards, in right foreground.]

W. T. Macoun, Ottawa, Can. Collection of apples of Canadian origin including Fameuse, McIntosh, St. Lawrence, Louise and Canada Baldwin.

Abbotsford Fruit-Growers' Association, Abbotsford, P. Q., Can. Collection of Russian and Canadian apples.

Southern Michigan Grape Growers' Association, Canton, Mich. Collection of commercial varieties of grapes including Vergennes, Salem, Delaware, Worden, Concorn, Niagara.

South Haven Sub-Experiment Station, South Haven, Mich. Collection of fruit containing apples, pears, plums and peaches. Of the last, Kalamazoo, Engle, Brunson and New Prolific are of Michigan origin.

Experiment Station, Lansing, Mich., and Mullen Paper Box Co., St. Joseph, Mich. Collection of fruit packages including those of veneer and paper.

N. E. Jack, Chateauguay Basin, P. Q., Can. Collection of apples and plums.

Horticultural Department, Cornell University, Ithaca, N. Y. Collection of hybrid plums.

Jas. H. Ricketts, Washington, D. C. Exhibit of bartlett pears.

Albemarle Orchard Co., Charlottesville, Va. Collection of apples.

James Dickie, Massie's Mills, Va. Collection of apples.

J. B. Valentine & Co., Boston, Mass. Tropical and subtropical fruits from Florida, Porto Rico, Cuba and Dominica.

Miss E. Jackson Clark, Pomfret Centre, Conn., by John Ash, gardener. Collection of apples and pears.

G. B. Cellon, Miami, Fla. Samples of Avocado pear.

Horticultural Department, Experiment Station, Brookings, S. D. Collection of improved sand cherries.

EXHIBITS RECOMMENDED FOR TRIAL.

W. K. Munson, Grand Rapids, Mich. A striking exhibit of a new variety of grape called King. This resembles Eaton in size and appearance, but appears to be distinct. Apparently well worthy of trial.

John Charlton & Son, Rochester, N. Y. A new variety of pear said to be a cross between Anjou and Josephine de Malines. Appears as a handsome autumn pear of medium quality.

Samuel Cooper, Delevan, N. Y. Fruit and plant of Pan-American strawberry. Apparently an unusually prolific form of the everbearing type.

F. M. HEXAMER, New York City.
JOHN CRAIG, Ithaca, N. Y.
A. G. GULLEY, Storrs, Conn.
G. B. BRACKETT, Washington, D. C.
Committee.

Report adopted.

JUDGING FRUITS BY SCALES OF POINTS.

F. A. WAUGH, AMHERST, MASS.

The importance of a more thorough study of varieties has been urged upon us of late in many ways, most of all by experience. We have seen very clearly that our recent great advances in methods of fruit growing, wonderful as they are, are not enough in themselves to insure success. We must understand more about fruit marketing, on the one hand, and, on the other, more about the minute characters of the fruits themselves. If one variety will ship better than another, or keep longer in cold storage, or withstand better the scald, then that variety has received a considerable practical recommendation.

These and various other considerations, which we need not now review, have convinced nearly all of us that our next pomological advances must be in the line of the systematic study of varieties. It is very gratifying to note the revival which is going on in the study of systematic pomology. It may seem at times that we are coming back to the days of Downing and Dr. Warder, but we need not be discouraged by the thought that this means any retrogression. Pomology is really very much in advance of what it was fifty years ago, even though we do discover that we have neglected to our detriment the methods of study pursued by the founders of our American Pomological science.

It has been my pleasure and my duty at various times and on various occasions during the last few years to call attention to these facts, to point out this trend in our horticultural work, and to suggest what seemed to me to be the best method of carrying forward our investigations. Up to this time, however, I have not indulged in any remarks on the subject of judging fruit, and indeed very little has been said by anybody on this matter. It belongs in reality, however, to the systematic study of varieties. When we come to be more critical with regard to the fine points of difference between one variety and another, or between two samples of the same variety, then we require some reliable method of comparison. At the present time our work is certainly becoming rapidly more critical and refined, and better methods of comparing samples of fruit must be adopted very presently.

The citrus fruit growers, who in all their methods are apt to be ahead of the times, have already done something in this line. At the Twenty-third session of this Society, held in Washington twelve years ago, there was a sharp discussion led by Mr. J. E. Cutter of California over the methods of judging oranges and lemons. This discussion was fully reported in the Proceedings of the Society for 1891, where it may be consulted by any one interested. The scheme there proposed is quite exhaustive and very instructive. At the present time, however, we ought to take up the subject as applied to the fruits of the Central States. No very elaborate system for judging them has as yet been proposed.

In this matter we have much to learn from the breeders and connoisseurs of fine stock. The best judge of live-stock very seldom tries to decide off-hand between the merits of two competent coach-horses, dogs or pigeons. He submits each one to the score-card test. Even in judging butter, brandy and seed-corn a scale of points is frequently used. I think no one will deny that our apple and peach growing industries merit quite as careful attention.

Everyone is familiar with the general methods of using the score-card. A score-card is devised with the intention of giving the different characters of the animal, fruit or other article under examination their proper relative values. It requires long experience to determine what these relative values ought to be, and in the end an absolute agreement between experts cannot be reached. Nevertheless a great deal can be done, and disagreements are not so serious in most cases as to discredit the system. What we need now most of all, after a thorough discussion of the subject, is more practical experience in the use of the score-card for judging fruits.

A general score-card for fruit-judging has been adopted by the Massachusetts State Board of Agriculture and is used sometimes at county and district fairs though its use is by no means required. This score-card is as follows :—

SCALE OF POINTS FOR JUDGING FRUITS.

ESTABLISHED BY THE MASSACHUSETTS STATE BOARD OF AGRICULTURE.

	Number of points	*Score*
Quality	20	
Form	15	
Color	15	
Size	10	
Uniformity in size	20	
Freedom from Imperfections	20	
Perfection	100	

It will be understood that this is a general scale of points for judging all kinds of fruits. In anything like careful practice, however, we ought to have a different score-card for each class of fruit—one for apples, one for peaches, one for plums, another for grapes, another for strawberries, etc. The only score-cards of this kind which have been published and used to any extent, so far as I know, are those designed by the Ontario Fruit Growers' Association. The one for apples and pears is as follows:—

ONTARIO SCORE-CARD FOR APPLES AND PEARS.

	Value of points	*Score*
Form	10	
Size	10	
Color	10	
Freedom from Blemishes	20	
Uniformity	20	
Quality	30	
Perfection	100	

The one for grapes is as follows :

ONTARIO SCORE-CARD FOR GRAPES.

	Value of points	*Score*
Flavor	30	
Form of Bunch	10	
Size of Bunch	15	
Size of Berry	15	
Color	10	
Firmness	5	
Bloom	5	
Freedom from Blemishes	10	
Perfection	100	

We need not stop to criticise these now. Let us first get the subject before us.

Mr. R. W. Starr of Wolfville, Nova Scotia, a venerable and honored member of this Society, who has had long experience in judging fruits, tells me that he does not commonly use a score-card, but that in close competitions he compares the samples according to a scale of points about as follows. :

FORM The specimens should have the normal character of the variety, and should be nearly uniform.	2
COLOR Should be bright, clear, and clean, and typical of the variety.	2
SIZE Good size is a sign of high cultivation.	2
FREEDOM FROM IMPERFECTIONS Should not show worm-holes, spots, bruises, or blemishes; the stem should be intact, and the bloom undisturbed.	6
Total points	12

I cannot lay claim myself to any expert knowledge nor to much experience in this matter of judging fruits. Nevertheless I have taken the responsibility, as every teacher must for his own classes, of designing score-cards for the students of the Massachusetts Agricultural College. Those which we use in our class-room work are copied below; and I might add that these are the formulas which I use myself on those occasions where I am asked to judge fruit away from home.

SCORE-CARD FOR APPLES.

Form	15	....
Size	10	....
Color	20	....
Uniformity	20	....
Quality	15	....
Freedom from blemishes	20	....
Total	100	

Variety..

Grown by..

Scored by...........................Date..........

SCORE-CARD FOR PEACHES.

Form	15	....
Size	10	....
Color	15	....
Uniformity	20	....
Quality	20	....
Freedom from blemishes	20	....
Total	100	

Variety..

Grown by..

Scored by......................Date..............

SCORE-CARD FOR PLUMS.

Form	10	....
Size	15	....
Color	15	....
Uniformity	20	....
Quality	20	....
Freedom from blemishes	20	....
Total	100	

Variety ....
Grown by ....
Scored by .... Date..............

It will be seen that thus far we have dealt only with the fruit itself. In a fruit exhibit that is all there is to see. The practical fruit grower, however, in judging between two varieties or two lots of the same variety must take into consideration the tree or plant also. He must consider its growth, its hardiness, its productivity. These are very important characters, and in anything like a complete system of judging fruits, score-cards would have to be devised giving suitable prominence to these characters of the plant. For the present we can do little more than suggest the necessity for this sort of work. A single illustration comes conveniently to hand in a score-card for strawberries recently sent to the *Rural New Yorker* by Mr. J. R. Reasoner of Illinois. This score-card is as follows :

CHARACTER	*Scale of Points*
Rootage	5
Stock and foliage	5
Vitality, drouth proof	7
Plant maker	10
Healthfulness, rust proof	5
Blossoms	5
Staminate	
Pistillate	
Productiveness	25
Size	10
Shape	5
Color	5
Flavor	8
Firmness, shipping quality	10
Totals	100

It will be seen that out of one hundred points required for perfection only thirty-eight are given to the fruit, the remaining sixty-two being divided between the qualities of the plant itself.

A perfect score-card would require even greater refinement than has yet been suggested. In a perfectly ideal system it would not be sufficient even to have separate score-cards for apples, peaches, plums, etc. There would have to be several different score-cards for apples. There ought to be one for cold-storage varieties, another for summer market varieties, and another for home-use varieties.

Nothing is more evident than that a variety is judged on a different basis when it is to be shipped to cold-storage than when it is to be eaten on the dinner-table at home.

In the last analysis I suppose each different variety would require a score-card of its own. Thus the qualities which constitute a perfect Ben Davis are not the same which make a perfect Williams Favorite. Mann is notable for its keeping quality, and two samples of this variety competing together would be judged chiefly on that point. Maiden Blush is remarkable for its beauty, and two competing samples would be judged chiefly on this quality. Mother is cultivated principally on account of its high flavor, and with this variety all other considerations ought to give way before this one. Thus in a scale of points for Mann special emphasis should be given to storage quality ; in a scale of points for Maiden Blush special stress should be laid upon external beauty ; in scoring Mother principal attention would be given to quality.

It is manifestly impossible in the short time that we now have at our disposal to go ever all these several score-cards for the various fruits and criticise them point by point. We cannot now decide whether flavor should count ten and color five or whether color should count ten and flavor five. These things must be worked out through long experience and by careful study ; but we certainly must insist upon the value and the importance of such work. It is to be hoped that it will be taken up in earnest and immediately by those who can carry it forward to some definite result.

Mr. Strong : I have an imperative call which takes me home, so I must leave at this time. You will allow me to apologize for the lack of seats for the park-way ride yesterday afternoon. I think the fault doesn't lie with the committee. We provided ample seats for all who would register, and we made sufficiently prominent requests that they should register, but a good many went who did not register and therefore the number of seats was not adequate.

I wish to present the following motion : That the thanks of the American Pomological Society be extended to our retiring officers, President C. L. Watrous and also to our retiring Secretary, Wm. A. Taylor, for their able and untiring efforts in promoting the interests of the Society through their long terms of service. We are grateful for the wisdom and devotion with which they have administered their trust and we express the hope that they may yet share with us the satisfaction in seeing the results of their labors rewarded in the future prosperity of the Society. Motion is carried.

The Chairman : I wish to return my sincere thanks for the vote just given and to say that from the bottom of my heart I thank all of those friends who have so loyally and so devotedly held up the hands of these two officers during the last six years. When we came into office a good many of the best friends of this Society felt discouraged. There was a lack of hope and in some ways a little lack of harmony. Now we are full of hope, and I believe we are in perfect harmony, so that the future of this grand old Society, as far as human eye can see, is assured and instead of being in its years of decrepitude, it has only begun to be in its young and lusty manhood, and has a long and useful future before it in the years to come.

Secy. Taylor : I wish also to return my most sincere thanks to the Society for the kind words that they have said in this resolution, and I wish also to say in explanation of what may appear to be a retreat on my part, that I hope you will not so consider it, for it is not that. I hope to be no less active in the Society and expect to do my share to advance its interests, which are those of American pomology. This can be done wlthout serious conflict with other duties that are now imperative with me. I thank you most sincerely for the hearty coöperation that has been manifested in the preparation of this programme and in the carrying out of it.

DISCUSSION OF PAPER.

Mr. Barry: I arose the first time to speak in regard to the paper of Prof. Waugh. I feel great interest in that question. I thought it might be a good idea for Prof. Waugh to give us a practical demonstration of this point that is to bring in the fruits right here and show the method as in a real competitive exhibit. Of course it is not possible now, but that could be done I think, when he gets his scale of points arranged. I know the time is passing rapidly, but I want to say something to you about the work of the association. I am an officer of an association myself, and I know the laborious work that has to be done, but in my case the work is all done by the secretary, but in this Society it is also done by the president, and every member of this Society must thank both officers for what has been done. No one appreciates all the work that is necessary to conduct an association of this kind. We derive every benefit from it and they do the work. I know we are all very grateful to Mr. Watrous for the work he has done. He took hold of the Society at a critical moment. I anticipate a great deal of work in the future from Mr. Hale. He is the right man in the right place, and he is going to push it along.

Prof. Craig: There are two points in connection with the score-card that are well worth considering. One point is the better appreciation of quality in fruit engendered by examining them on the score-card basis. We shall have constantly brought before us that important question of quality which we in this commercial age are apt to overlook—apt to forget entirely. The score-card keeps quality before us. The other point is that by means of the score-card we have a way by which we can bring in and interest the young in this Pomological work. We might, I think, offer prizes at our fairs and exhibitions, for the young man who can best judge a collection of fruit. Give them a score-card outlining the means by which they can score that fruit and give a prize for doing it. In that way they will get to know the fruit and may become interested in the work.

Mr. Van Deman: This matter of judging fruit is one which is very near my heart. I have had a great deal of experience in the course of my work in pomology. It has been my duty a great many times to judge the various exhibits of fruits at the fairs and expositions, in fact I have been at it about thirty years, and I found a great many difficulties, and I see other persons here in the room who have been associated with me in this work, and I know they feel the same way. At the exposition in New Orleans in 1884 and 1885, I had the Chairmanship of the committee on awards of citrus fruits, which were shown from California, from Florida and from Mexico and the West Indies, and we saw there that it was impossible to do anything like justice in making those awards, especially in view of the close competition, without using a score-card. We saw it was impossible to do justice without some systematic manner of judging the fruits and Mr. Lyon and myself at that time got up a set of points upon which we should score. I am sorry I have not got them with me, and if it is in accordance with the desire of the secretary, I will submit in writing these points just as we recorded them, as we prepared them and acted upon them. This was in 1884–5 and I do not doubt but that was the first practical attempt, at least to any great extent, to apply systematic rules for judging of fruits. I would further say that these two exhibits were held entirely separate, the citrus fruits of California and those of Florida ripening at different times, so we had to go upon written records.

Mr. Brackett acted with Mr. Lyon and myself, and one other gentleman from New Orleans. I would say that I am heartily in favor of this Society preparing and adopting rules and sets of points so that we can publish them so that there can be a uniformity of action all over North America, and that we perhaps may be able to set the pace for the rest of the world in regard to the proper and sensible way of judging the values of fruits.

I am ready to offer a resolution that the chair appoint a committee to take up this whole matter of the judging of fruits by scales and points, and report at the next regular meeting of the Society.

Secy. Taylor: Wouldn't it be possible to give that committee authority to report before the next biennial meeting? This matter ought to have an important bearing upon the classification of fruit before the exposition next year. I amend that motion so that the committee shall have authority to report and its report be put into the proceedings of this meeting.

It is carried and committee of five appointed.

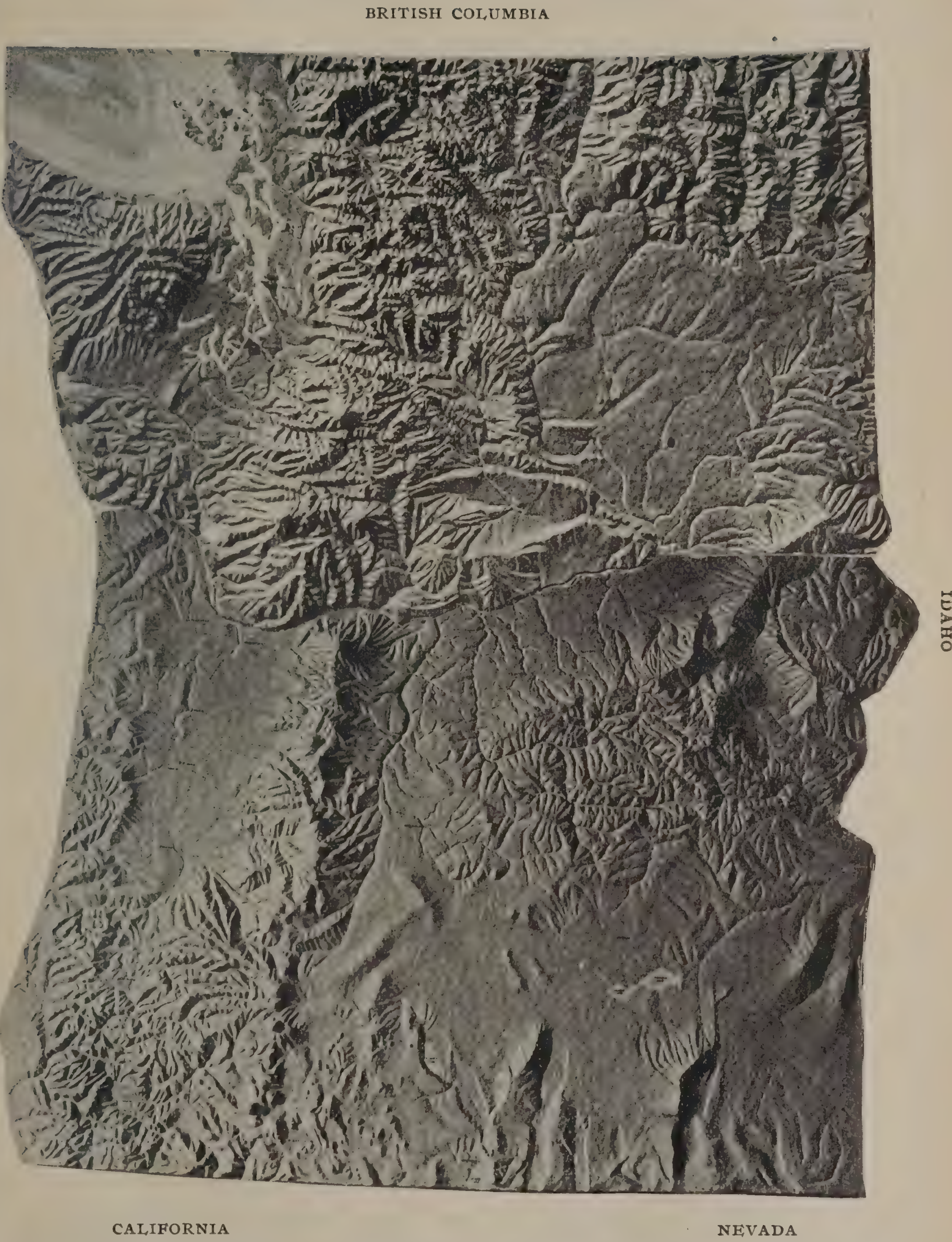
(See special score-card committee.)

A SKETCH OF FRUIT-GROWING IN THE PACIFIC NORTHWEST.

Professor S. W. Fletcher, Ithaca, N. Y.

Commercial fruit-growing in the Pacific Northwest is mainly the development of a quarter century. Dr. J. R. Cardwell, one of the pioneers, relates that in 1853 a few peach plums were sold in the streets of Portland, then a mere village, to a clammering and hungry crowd at five for a quarter, the smallest coin current in those days. This was one of the first sales of home grown fruit in the Northwest. It had been supposed that improved varieties could not be grown there. A little later a few venturesome spirits planted prunes, and were surprised with large yields and fine fruit. Some of these prunes sold in the early days for 25 to 30 cents a pound; the growers now content themselves with 5 cents a pound. Prune-growing in the Northwest has since become an industry of many thousand acres, and other fruits have increased in like proportion. In scarcely a quarter century the fruit area of Oregon has grown to 80,000 acres, and of Washington to 100,000 acres. By far the majority of these orchards are still under fifteen years of age, and the orchard area is increasing from 10 to 20 per cent. annually. In 1901 it was estimated that 2,750,000 fruit trees had been planted in the State of Washington alone, during the years 1889–1901.

Men are the makers of history in horticulture as well as in nations. The whole history of northwestern fruit-growing is a record of obstacles overcome, ancient prejudices set at naught, and success won by daring and energetic men. Orchards now thrive where the "old-timers" said fruit could never be grown. The lowlands of the Coast Region, the wind-swept uplands of the inland prairie, and the sage brush deserts of the river basins—,all now pay tribute to the pluck and energy of the northwestern fruit-grower. We in the East already know something of his aggressive spirit. Already eastern markets have felt the competition of northwestern fruit, and the pocketbooks of eastern fruit-growers have felt the impact of northwestern push. This is but the beginning of a long campaign. These hustling northwesterners will keep right on pushing their fruits into our eastern markets. They will make us look to our laurels, and to our orchards. If they can force our eastern fruit-growers to adopt better culture, better packing, better varieties and a more aggressive spirit, in order to keep their



Relief Map of the Pacific Northwest. From the relief maps of Washington and Oregon, prepared by Prof. Solon edd, Washington Agricultural College, Pullman, Wash. Notice (1) the high crests of the Cascade mountains running . to S. dividing both states into a Coast region and an Inland region ; (2) the Puget Sound country in Washington ; (3) the ep Inland Valleys of the River Courses; the Inland Uplands or Table-lands.

local markets, the competition which many eastern growers now complain of so bitterly will be a help rather than a hardship. I have recently spent two years in examining northwestern fruit-growing, particularly the fruit-growing of Washington, and shall try to give a summary of its most striking features, as seen from the point of view of an eastern man.

By the Pacific Northwest is meant the states of Oregon, Washington, and lower British Columbia. The horticultural conditions in Idaho are quite similar to those in Eastern Washington and Eastern Oregon, and the fruit interests of that state are rapidly assuming large proportions, but they cannot be considered here. Even without Idaho the area of the Pacific Northwest is still immense. Oregon, with 95,274 thousand square miles is nearly twice as large as the State of New York; Washington, with 89,180 square miles is larger than all of the New England states together, and British Columbia is a vast stretch of 400,000 square miles of verdant forest and plain, just beginning to be quickened into fruitfulness by the touch of man. The Northwest can fill the fruit cellars of a nation.

One of the first impressions of an eastern man who travels in the Northwest is the remarkable diversity of its horticulture. It is divided into a great many "Countries;" as the "Palouse Country," the "Big Bend Country," and the "Puget Sound Country." A "Country" is a district having approximately uniform climatic and soil conditions. Some of these Countries are as large as the State of Massachusetts; others are merely narrow river valleys. The horticulture of each of these Countries is distinctive and unique, and often very unlike that of the adjoining Country. For example, the deep valley of the "Snake River Country" has an almost subtropical climate, and grows fine vinifera grapes; while the surrounding "Palouse Country" has such a short summer and bleak winter that only the earliest and hardiest of native grapes can be ripened. When fruit growers from all these diverse Countries gather at the meeting of the Northwest Horticultural Society one would expect the discussions to be permeated with a fierce controverval spirit, because of these local differences in experience and practice. It seemed remarkable to me, therefore, to observe how clearly these northwestern fruit growers distinguish between what is general and what is local in fruit-growing; between principles and practice. Many of our eastern horticultural meetings would be freer from profitless controversies over minor details of practice—due mainly to differences in conditions—if this broad recognition of principles were more common.

Although there are these many local differences, the Northwest may be broadly divided into three great horticultural regions:—*The Coast Region*, west of the Cascade Mountains, having a heavy annual rainfall and a very even temperature throughout the year; *The Inland Valleys*, east of the Cascade Mountains, having an altitude of from 300 to 1000 feet, and a rainfall of from 4 to 10 inches, so that irrigation is usually necessary for crop production; *The Inland Uplands*, east of the Cascade Mountains, having an altitude of from 1000 to 3000 feet, and a rainfall of from 12 to 25 inches; not irrigated. The horticulture of each of these three regions will be discussed separately.

I. THE HORTICULTURE OF THE COAST REGION.

The Coast Region includes all parts of Oregon, Washington and Lower British Columbia, west of the Cascades. It is characterized by a rather heavy rainfall and a very even temperature throughout the year. The snow-capped peaks of the Cascades, which have an average elevation of 8,000 feet, form an effectual barrier to the inland sweep of sea winds, and cause them to precipitate their moisture on the coast plain below. The people who live in this region are sometimes called "web-footers" by inland scoffers, it being alleged that after living a few years in that wet climate their feet become like those of a duck; but as a matter of fact the rainfall in the greater part of this region is but 25 to 60 inches, no more than that of the Ohio Valley. In a very few places it is as high as 90 inches a year. Most of the precipitation is between the months of November and April, the so-called wet season. The winters are very mild and equable. The ground rarely freezes. Pastures are green the year around. The summer months are clear and cool. In short the Coast region has a marine climate, very similar to that of England and Denmark.

The natural result of the even temperature and the heavy rainfall of the Coast Region is a very luxuriant vegetation. All trees make a very rapid growth. Brakes stand head high in the woods and forest trees attain an immense size. Firs 15 ft. in diameter and 250 ft. high are common. Trees and fences are hung with lichens. Who has not heard of Washington and Oregon timber? Nearly half of the Coast Region timber has been cut, or has been swept away by relentless forest fires. Deforested areas very quickly become covered with trees again, and these attain marketable size in a very short time. The climate and vegetation of the Coast Region are certainly unique.

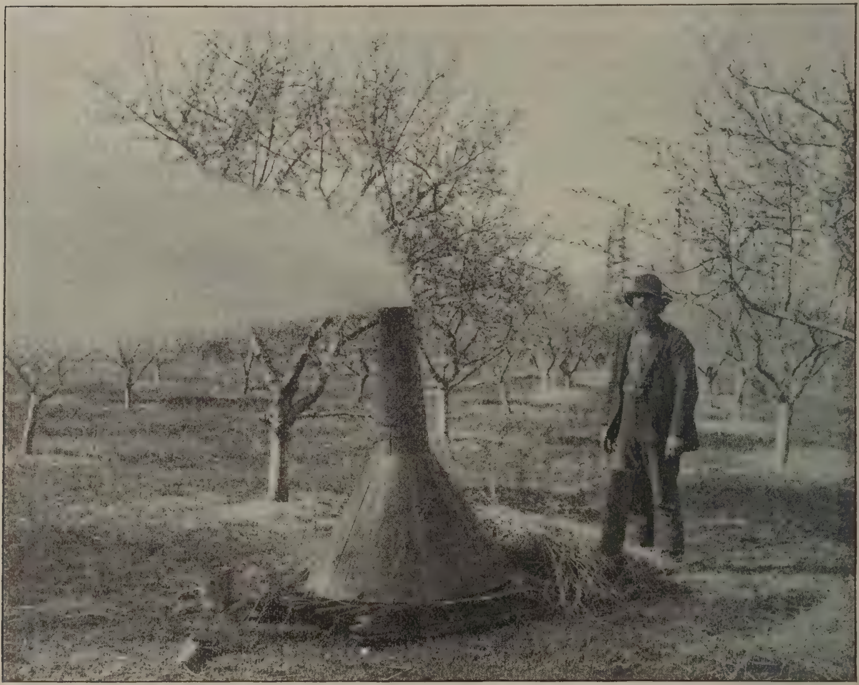
The horticulture of the Coast Region has five striking features,—the growing of prunes, cherries, small fruits, bulbs and seeds. Each of these will be considered briefly. Bulbs and seeds, while not pomological subjects, are such interesting features of Coast Region horticulture that I shall call attention to them here.

1. *Prunes.* There are now about thirty thousand acres of prunes in Washington, and thirty thousand acres in Oregon. The output of dried prunes from the Northwest in 1901 was 24,000,000 lbs., which returned over $1,000,000 to the growers. The acreage of prunes is still increasing. About half of the prune area of the Northwest is in the Coast Region, and half in the Inland Valleys, but by far the greater part of the dried product comes from Coast Region orchards. The inland growers market most of their prunes as fresh fruit. As in California, prunes generally do best near the coast or along river valleys, where the warm ocean fogs reach inland. The valleys of the Columbia and its tributaries, also of the Rogue and Umpqua Rivers are the chief prune districts of the Northwest. It is a crop which requires special care in selecting a site for the orchard.

The Italian is the chief variety of prune grown in the Northwest. French, Silver and Hungarian are grown to a slight and decreasing extent for drying, but the latter two are more popular for shipping green. The French or Agen, which is the chief variety in California orchards, is here almost worthless for drying. Unless the trees are heavily thinned, which is too expensive an operation at present prices, French prunes are of very small size. The Italian has several advantages over other varieties. Under fair culture it is of large size. It never over-loads and very rarely requires propping or thinning. It is also a tart prune, and there are many who prefer the tart, appetizing flavor of an Italian to the rather insipid sweetness of the California French prune. It is the larger size and superior quality of northwestern prunes which enable them to compete with California prunes, which can be put on the market more cheaply because they are mostly dried in the sun, not in expensive evaporators, as in the Northwest.

The Italian prune, however, has several disadvantages. It has numerous constitutional and fungous troubles. It is also an early bloomer, and the blossoms are often cut off by frost. The making of smudges for protecting fruit blossoms from frost has been practiced by northwestern fruit growers with considerable success. Wet straw, or strawy manure is the material chiefly used. The temperature in an orchard is often raised six degrees on a frosty night by rolling a dense cloud of wet smoke from the smudge piles over it. Smudging is successful only on comparatively level land. On slopes the smoke drifts away too quickly. It is altogether probable that very soon the prune growers in many parts of the Northwest will be organized for coöperative smudging, and that whole districts will be enveloped in the protecting cloud on frosty nights. Many northwestern prune-growers are now confident that the Sugar prune, originated by Luther Burbank, will meet their need of a prune which ripens several weeks earlier than Italian, so that the drying season may be extended.

Like every other industry in the Northwest, prune growing has had its boom days, but those are over. Eastern men who went there some years ago with dreams of $1,000 per acre profits, are now as wise as those who went to California expecting to reap a fortune from a few acres of lemons. There is no fortune in prune-growing when prunes return the grower 3 to 5 cents a pound; but there is a good income in it for the man who knows the business. An eight-year old tree should bear 30 pounds of dried fruit, and it costs one and one-half cents a pound to handle it. The grower should get at least from $40 to $50 net profit per acre, and the average is somewhat higher. There are many eastern fruit growers who average $150 per acre from their apple orchards. I believe that the opportunities for making money in fruit-growing are greater in the East than in the Northwest, providing the same degree of intelligence and energy is shown in both cases.



A device used in the Northwest for making a smudge cloud to protect prune orchards from frost. The big inverted funnel rests on a piece of sheet iron. Wet straw is fed through a small door near the bottom. The stone-boat is dragged through the orchard and leaves a protecting cloud of smoke behind. Photo. by S. W. Fletcher.

The prevailing low prices of prunes have driven some growers out of the business, and have set the rest hustling for broader markets at home, in Europe and in the Orient. The rate on cured fruits from the Pacific Coast to Europe via New York is from $1.10 to $1.35 per hundred pounds. A brisk demand for Pacific Coast Italian prunes is being created in Europe at 15 to 18 cents a pound. One of the chief causes contributing to the dissatisfaction of prune growers is the difference between the first and the last selling price. Prunes sold in the Northwest for 4 cents a pound retail in eastern cities for 15 cents a pound. Various prune growers' organizations have attempted to correct this evil, but with indifferent success. Prune men have gone at the problem of broadening the market for prunes and securing better prices in a systematic way. One of the large Oregon orchard companies has put up its product in dust-proof, air-tight and moisture-proof packages. Their prunes are cured artifically and with cleanliness, which cannot be said of California prunes, and these facts are kept constantly before the public. Improved methods of cooking prunes are demonstrated in many large department and grocery stores, and with each package is a little pamphlet, giving the new and right way of cooking, which is given to the purchaser. He finds, on following directions, that he never has known what a prune is; it is so much superior to the old article that he is delighted and buys more.

2. *Cherries*. The second striking feature of the Coast Region horticulture is its cherry-growing. Those who have attended any of the great expositions well remember the wonderful sweet cherries exhibited by the northwestern states. The Coast Region excels in the growing of Heart and Bigarreau varieties, but sour cherries do better inland. The Coast Region soil is quite variable, but much of it is a deep, moist loam, very rich in humus. On these soils sweet cherry trees grow to an immense size, and produce an almost unbelievable quantity of high grade fruit. I have heard of one Napoleon tree, 25 years old, which is 7 ft. in circumference, and bears 1,000 lbs. of fruit some seasons. These cherry trees are almost always in sod. They grow so vigorously that tillage would often be a disadvantage. Napoleon, Black Tartarian, Black Republican and Bing are the chief commercial varieties. Gumosis, which is very serious on cherries in this region, has been effectually prevented by some growers by grafting on Mazzard stock, about 3 ft. from the ground. Northwestern cherries are now shipped in refrigerator cars as far East as New York City. An increasing per cent. of the cherry crop, especially of the light-colored varieties, is being canned and evaporated.

3. *Small Fruits*. The even, moist climate and deep, humus-laden soil of the Coast Region is very favorable for small fruit growing. One of the most famous small fruit regions in the country is the Puyallup Valley of Western Washington. The raspberry and blackberry growers of this valley are organized into an association for coöperative shipping, which is one of the most successful enterprises of this kind in the West. In 1900, 28,000 cases of berries of 24 qts. each were shipped from this point, under the supervision of the organization. A few years ago the limit of profitable shipment without refrigeration was 1,000 miles. Few Puyallup berries then went east of Butte, Montana. In 1897 the Bohn refrigerator car was introduced, and now Puyallup Valley berries are shipped to Chicago and to the Atlantic cities.

Puyallup and Sumner are interesting places to visit in the height of the berry season. The long line of spring wagons driving to the shipping point with berries reminds one of a wheat harvesting scene in the Inland Region. The berries are never picked when wet. They are usually picked in the cool of the morning, and delivered at the shipping point by five A. M. When they are to be shipped such long distances, great care in handling is necessary. The association now makes car load shipments of berries to eastern points; $1,127 was received this year for a single car load of berries shipped to Butte, Montana. The growers find that they get better returns through the association than they could get individually, and support the organization loyally.

The acreage of raspberries and blackberries in the Puyallup Valley is increasing yearly. Many hop yards are being replanted to berries. Washington and Oregon are two of the leading hop-growing States in the Union, but the price of hops has been so low and uncertain of late that many hop-growers are going out of the business. Hop growers have taken 7 cents a pound for their hops some years, and refused $1.00 other years. Berries are a surer crop under present conditions. The red varieties chiefly grown are Red Antwerp and Marlboro. The latter variety often bears 1,200 lbs. per acre, and has a picking season of about 34 days. The most profitable blackberries are Kittitinny, Snyder and Lawton.

One of the interesting points in Coast Region berry-growing is the remarkable growth of canes. Canes 10 and 12 ft. long are the rule, not the exception. Pinching back the growing shoots when knee-high does not make a stocky branching cane, as in some sections. The canes are commonly trained between two rows of split rails, and are bent over to facilitate picking. The size and quality of Coast Region berries is proverbial in eastern markets. The Ever-bearing, or Evergreen Blackberry, which has found little favor in the East, is one of the remarkable sights of the Coast Region. There it is trained to a trellis like a grape vine, with four or six canes often 30 to 40 ft. long. From two to four crates of berries are often picked from a single plant. These berries are of good quality, they carry well and sell well. The Logan-berry is also quite profitable.

Another noted small fruit section of the Northwest is the Hood River Valley of Oregon. Here the strawberry growers are organized into a very successful Union for coöperative shipping. 90,000 crates of strawberries were shipped from the Hood River Valley in 1903. Many of these go to far eastern markets in refrigerator cars. The principal variety grown is called the Hood River, a local seedling. The Hood River Valley is also a famous apple section.

These are a few illustrations of what the Northwest is doing in small fruit culture. Other sections are equally successful. English gooseberries grow to an immense size here, and are quite free from mildew. The Willamette Valley of Oregon is noted for its strawberries as well as for its tree fruits. Many of the islands which dot the wide expanse of Puget Sound are becoming extensive berry shippers. Mr. R. Heiberg of Vashon Island picked 1200 crates of strawberries in 1903 from two and three-fourths acres. Most all of the small fruits raised in the Northwest are marketed in Montana and British Columbia mining camps, but a yearly increasing amount finds its way to Eastern cities.

Considerable attention is now being directed to the canning, preserving and evaporating of small fruits for Alaskan and Oriental trades. The Puyallup and Sumner Berry Growers' Association puts up many thousand jars of raspberry and blackberry jam yearly. J. O. B. Scoby of Olympia put up about 100,000 quarts of strawberry jam in 1900. Jams, preserves and evaporated fruit find a waiting market in Alaska, China and the Philippines. I believe that the canning, preserving and evaporating of fruits and vegetables for this trade will soon become one of the most important industries of the Northwest. Soft fruits cannot be shipped fresh to China and the Philippines, but all sorts of preserves can be sent safely, and there is an almost unlimited market for them there.

4. *Seed-Growing*. There is a bright outlook for seed-growing in the Coast Region, especially for the growing of cauliflower, cabbage, celery, pea and other

seeds which love a cool and moist climate. Most of the cauliflower seed used in the United States comes from Denmark, which appears to have very favorable conditions for this industry. It will be remembered that the Coast Region climate is much like the Danish climate. Cauliflower seed from Denmark is very apt to be of low vitality, and of an inferior strain. Cauliflower seed grown in the Puget Sound Country has been found superior to the general run of Danish seed for commercial planting. I have grown plants from Danish and from Washington seed side by side and have always found a difference in favor of the latter. Pea seed from the Coast Region is superior to eastern grown seed. Two of the largest seed growers in the Northwest are A. G. Tillinghast of La Conner, Wash., and H. A. Marsh of Fidalgo, Wash. Northwestern seed growing is yet an infant industry, but it does not want for prophets to predict for it a bright future.

5. *Bulb-Growing.* Another unique feature of the Coast Region horticulture is its bulb-growing industry. We pay Dutch gardeners alone half a million dollars a year for bulbs, and pay another half-million to the bulb-growers of other countries. Most of these bulbs can be produced equally well in the Coast Region of the Pacific Northwest. There is no industry of the Northwest in the success of which I have greater confidence than in bulb-growing. The Coast Region, particularly the Puget Sound Country, excels in bulb-growing, chiefly by reason of its climate, which is quite similar to that of Holland, the greatest bulb-growing country of the world. Bulbs need a cool, even and moist climate for ten months of the year, and two months of dry, clear weather in summer to ripen them. These conditions are supplied perfectly in the Puget Sound Country. There are now several bulb gardens in Washington and Oregon of which those of Geo. Gibbs and C. T. Canfield at Whatcom are the largest. There are many thousand acres of fine bulb land in Washington alone. Puget Sound bulbs, especially hyacinths, tulips, crocuses, gladioli and lilies have been tested by many American florists and pronounced superior to the best Holland grown stock. Several large eastern florists have become interested in northwestern bulb-growing, and we may expect it to develop rapidly on a commercial scale within the next few years.

Mention should be made in passing of the nut industry of the Coast Region. Persian walnuts are rapidly becoming an important crop west of the Cascades, particularly in the valleys of the Columbia and its tributaries. Filberts, chestnuts, and other nuts are grown very successfully here also, but the most hopeful outlook is undoubtedly with the Persian walnut.

The chief lines of development in the horticulture of the Coast Region will probably be in the growing of prunes, sweet cherries, small fruits, seeds and bulbs. There will never be as many large commercial orchards of apples, pears and peaches here as in the inland region. The cost of clearing land is often from $100 to $175 per acre. General market varieties grown on this high priced land cannot successfully compete with fruit grown on the sage brush land of the eastern valleys, which can often be bought for from $20 to $25 per acre, and can be cleared for from $10 to $12 an acre. There is too much lost in tied-up capital. Furthermore, the humid climate of the Coast Region is very favorable to the development of many fungous enemies, and spraying for these is expensive. The fruit-growers of the Coast Region will probably find it more profitable to grow high quality varieties for local markets, rather than standard varieties for the general markets.

A brave show of tulips in the bulb garden of Geo. Gibbs, Whatcom, Wash. The Pacific Northwest "beats the Dutch" in this business. Photo by P. L. Hegg, Whatcom, Wash.

II. THE FRUIT-GROWING OF THE INLAND VALLEYS.

Crossing the mighty Cascades, we come to an entirely different country from that which has just been described. It is a part of what the geographies of fifty years ago called the Great American Desert. The luxurient vegetation of the Coast Region is gone. A few trees and shrubs fringe the streams and cluster in the hollows, but for the most part it is a prairie country. This inland section of the Northwest, embracing all of Oregon, Washington and a part of British Columbia east of the Cascade Mountains, may be roughly described as a vast, rolling plateau, cut here and there by the deep valleys of the Columbia and its tributaries. It has what might be called a continental climate, as compared with the marine climate of the Coast Region. The uplands are a grazing and wheat raising country, and are not irrigated. The valleys are a fruit and stock country,and are usually irrigated. Within a few miles of each other one may see here the horticulture of Georgia and the horticulture of Maine, so abrupt is the change from the wind-swept table lands to the almost sub-tropical valleys. It reminds one of Southern California, where oranges and lemons may be seen against a background of snow-capped mountains.

In this Inland Region all farming is on an extensive scale. On account of the difficulties in clearing land, the farms o the Coast Region are mostly small,—20, 30 or 40 acres being the areas commonly under cultivation on any one farm. It is a land of small holdings and intensive culture, where an increasing amount of attention will be given to catering to local markets and to the culture of special crops. The Inland Region, on the other hand, is a land of large holdings and extensive culture; 160 to 1000 acre-farms predominate. Staple crops and general purpose varieties replace the special crops and more local varieties of the Coast Region. Land is cheap and the soil is very rich and easy to clear for cropping. The commercial idea rules.

The Inland Valleys are now and probably always will be the chief commercial peach district of the Northwest, and one of its most important apple and pear districts. They have an elevation of 300 to 1000 feet, and a rainfall of from 4 to 10 inches. The summer days are often quite hot, but the nights are always cool. The winters are sometimes bleak, but never very cold. Most of the country is naturally a sage brush desert, but the soil is very rich and needs only the addition of water by irrigation to become transformed into a garden. Yields of over eight tons of alfalfa per acre are common, and oats often run eighty bushels per acre. Most of the irrigated land in the Northwest is in the valleys of the Columbia and its tributaries. The area under ditch is increasing very rapidly, and will increase still more rapidly when the government's plan for constructing irrigation reservoirs is put into operation. There are 3,000,000 acres of arid land in Washington alone, 2,000,000 of which can be irrigated successfully. The soil of the irrigated districts is mostly a loose, deep, volcanic ash, which is very easily worked. Most of the irrigation at present is from canals, which are taken out of a river at some distance above the land to be irrigated. Some of these canals are extensive enterprises. The Sunnyside Canal in Washington is 114 miles long and irrigates 285,000 acres of land.

The special factors which give the Inland Valleys preëminence in commercial orcharding are the low cost of producing fruit, and the excellence of the fruit. Equally good fruit can be raised here on land costing from $20 to $30 an acre as west of the mountains on land costing $100 per acre. The low humidity of these valleys gives a very large per cent. of clear days, the average being about 200 perfectly clear days in a year. The summers are practically cloudless. This gives fruit of very high color, which is the chief item in the commercial value of fruit. Fungous diseases do not thrive in this dry climate, but insect pests, especially the Peach Twig Borer and the Codling Moth, are often very serious. North Yakima, which shipped 1000 carloads of fruit in 1902, Wenatchee which shipped 225 carloads in the same year, and Walla Walla, which shipped 500 carloads, are illustrations of the extent to which fruit growing has become the leading industry in certain sections. Yakima County alone shipped $750,000 worth of fruit in 1901. This county was a sage brush desert twenty-five years ago.

Peaches are now picked in the Inland Valleys when fully mature, put in Bohn refrigerator cars and shipped to New York City. The temperature of these cars is about 36 degrees at the floor and 42 degrees at the top, and does not vary over one degree during transit. After a two-weeks' trip these peaches come out in fine condition, and are sold in New York City at good prices.

The probable lines of development in the Pomology of the Inland Valleys will be in the growing of peaches, apples, prunes, apricots and pears. The Inland Valley fruit growers are a keen class of men. They are fruit specialists and know their business. There are few regions where commercial orcharding has had a higher development and where the growers are so uniformly business-like in their methods.

III. THE FRUIT-GROWING OF THE INLAND UPLANDS.

This is the great wheat-growing and grazing section of the Northwest. It has an altitude of from 1000 to 3000 feet, and an annual rainfall of from 12 to 25 inches. The summers are short and never excessively hot. The nights are always cool. In winter this region is rather bleak, but extremely cold weather and heavy snowfalls are rare. A large part of this region is a succession of low, rolling hills, somewhat like the "kopjy's" of South Africa. The soil of these hills is very deep and very rich. Local Indian tribes explain how this came to be. According to their tradition, this whole country was once a vast level plain, with soil of marvelous fertility. Never were such crops produced in the whole world as here. It was the Beulah land of the red man. When the Indians heard that the white man was coming westward and would surely find and claim their garden spot, they were very sad. Finally they went busily to work and scraped all of the precious, fertile soil into huge heaps preparatory to carrying it away where the white man could not find it. But the white man came before they could do this, and the soil has been in piles ever since. The more matter-of-fact geologist claims that these hills were mostly formed by the wind; but be that as it may, their remarkable richness is beyond dispute. The soil is mostly a basaltic ash unmixed with sand or gravel. It holds water very tenaciously. Practically no rain falls between July and October, yet the soil holds enough moisture from the rainfall of winter and spring to ripen crops perfectly. In the famous wheat section of the Palouse Country, yields of 50–60 bu. of wheat per acre on unfertilized land are common. The virgin soil is covered with native "bunch-grass," growing in little clumps, which makes excellent pasturage.

The Inland Uplands are distinctively a grain and grazing country. There is a growing tendency, however, to supplement grain and cattle with orcharding. The immense wheat farms, sometimes of several thousand acres, are beginning to be diversified with dairying and fruit. Although the yield of wheat per acre is very large compared with other wheat sections, the prices are often very unsatisfactory and the farmers find it profitable to have other interests beside wheat. It should be understood, however, that the commercial fruit-growing of the Inland Uplands is, for the most part, but one spoke in the wheel of diversified farming, and is not usually the chief industry of a whole district, as in the Inland Valleys,

The commercial fruit-growing of this region is confined mainly to the growing of winter apples and pears. Peaches and sweet cherries are not hardy here except in favored spots, and the season is too short to ripen prunes and grapes satisfactorily, except in a few places. Plums do finely, but there is little demand for them since prunes carry to market so much better. Sour cherries are a wonder, particularly Ostheime, which is far superior to Morello and Montmorency here. I believe that one of the horticultural developments of this region will be the growing of sour cherries to can and evaporate for Oriental and Alaskan trade. The culture of winter apples will, however, predominate. Early apples grow equally well, but there is little market for them at present. The rather scanty rainfall, the short season and the high percentage of bright weather in summer, gives the apples of this region a color, flavor and keeping quality which is equaled in few other parts of the country. Scab, Codling Moth and other troubles are not serious here, and probably never will be very serious, on account of the peculiar climatic conditions. On these uplands, fruit trees come into bearing very early. With most varieties a full crop of apples is usually expected four years from planting While this upland fruit is not as large and sometimes has not the vivid color of the Inland Valley fruit, it keeps better and is usually considered of somewhat superior quality. This applies to pears also, but pear blight has wrought such havoc of late years that interest in pear growing is at low ebb.

The Inland Uplands of the Northwest are mostly a succession of low, rolling hills with soil of great depth and remarkable fertility. This is the great wheat and stock region of the Northwest, but it is also becoming famous for its winter apples. Photo by Robert Burns, Pullman, Wash.

It may be said in review that the chief line of development in the horticulture of the Inland Uplands will probably be the culture of winter apples and winter pears, and that fruit-growing in this region will be associated usually with grain and stock farming.

IV. A COMPARISON OF CULTURAL PROBLEMS IN NORTHWESTERN FRUIT-GROWING.

(1) *Tillage.* In the Coast Region, where the rainfall is heavy and the soils usually rich in humus, there is less need of tilling orchards for the conservation of moisture than in the dryer inland sections. Sweet cherries are usually left in sod, and a large proportion of the smaller apple orchards are in sod. Prunes are commonly tilled. Even under these conditions, which are especially favorable for the neglect of tillage, it is usually found that tilled orchards are far more profitable than sod orchards, especially when the latter are pastured. In some sections of the Coast Region, however, there is a growing tendency to adopt the mulching system, especially for apples. I believe that this will become a standard system of orchard management on the lowlands of the Coast Region. Some advocate seeding the orchard to clover, which is cut two or three years before the sod is plowed under, and the orchard is then tilled one or two seasons before being seeded to clover again. There are many orchard soils in the Coast Region where thorough tillage is as necessary as in any parts of the East, particularly on the lighter prune soils, but I am sure that some modification of the mulching system will often be found satisfactory with apples, pears and sweet cherries.

Almost all of the irrigated orchards in the inland valleys have clean tillage. In the early days it was thought that tillage could be neglected if the trees were only irrigated often enough. This was soon found to be a great mistake. There is a growing tendency to reduce the number of irrigations, and to increase the number of cultivations. Over-irrigation gives soft, watery, poorly-flavored and poorly-colored fruit, which does not keep or carry well. Some of the best orchardists in the Inland Valleys, who used to irrigate four or five times a year, now irrigate but once or twice, and keep up horse-leg irrigation the rest of the summer. I have seen a profitable orchard where there was but 8 inches of rainfall and no irrigation ; but the ground was covered five inches deep with a dust mulch. With the possible exception of California, there are no better tilled orchards on the Pacific Coast than in these inland valleys.

In both the Inland Uplands and the Inland Valleys, the question of cover crops for orchards is now attracting attention. Almost all of the orchard soils in both of these regions are deficient in humus, and constant, clean tillage during the hot, dry summers tends to burn out of the orchard soils what little humus they have naturally. In the Inland Valley orchards the cover crop problem is not so difficult as in the upland orchards, because moisture for the germination of cover crop seeds can be supplied at any time by irrigation. On the uplands, however, practically no rain falls between the first of July and October. It is absolutely essential that the orchard be tilled early in the season ; so that no cover crop can be sown all over the ground in spring. When tillage has ceased in late July or August, the soil is so dry that even field peas will not germinate unless drilled in deeply. Other seeds simply lie in the soil without germinating until the fall rains come in October. There are two ways of getting a cover crop in the orchard on the Inland Uplands. Some crop must be found which can be sown in early fall, and will make growth enough before winter to protect the ground. No more satisfactory crop for this purpose than field peas has yet been found. Or the orchard may be divided into alternate strips of cultivated and seeded land about 20 feet wide. A cover crop is sown on every other strip in the spring, and grown throughout the season ; the other strip is tilled throughout the season. The next spring the cover crop strip is turned under and is tilled that season, while the strip cultivated the previous year is seeded. Some such method as this must be adopted where it is not possible to give up all the orchard to the growth of a cover crop even for one season.

Northwestern orchards are, as a whole, better tilled than the orchards of the Atlantic States. We must admit that many of our eastern orchards are shamefully neglected in this respect. I believe that the neglect of proper tillage causes more loss to our fruit-growers than all the bugs and all the diseases put together. We may well learn a lesson from the Northwest on this point.

(2) *Pruning*. The methods of pruning orchards in the Coast Region are very different from the methods prevailing in the Inland Regions. In fact, they are exactly opposite. The climatic and soil conditions of the Coast Region tend to produce a very rapid growth of wood. Fruit trees come into bearing several years later than in the interior. They are often made unfruitful by this luxuriant growth, and have to be checked in order to throw them into bearing. It is advisable to winter-prune some orchards on the heavier soils, but a large proportion of Coast Region orchards, especially apple orchards on the lowlands, should be pruned in summer or spring. Many orchards are pruned when in full blossom. I have seen as much as one-half of the entire tree pruned off at this time—much as a greenhouse gardener trims off the rank foliage of his tomatoes under glass. The effect of this treatment is to check the exuberant growth and induce fruitfulness. Root-pruning is also practiced to a limited extent.

On the other hand, fruit trees in the drier inland regions come into bearing very early, and run to fruit instead of wood. They often bear themselves to death unless properly managed. The aim of the inland orchardist is not to reduce wood growth by summer pruning, but to increase wood growth by winter pruning. Practically all the pruning in this region is done in winter or early spring.

There is a similar difference of practice in the training of fruit trees on the two sides of the Cascades. On the west side, fruit trees are headed 4 to 5 ft. high, as in the old fruit sections of the eastern seaboard. Every effort is made to elevate the tree into the air, and to keep its top well thinned, so that the fruit may color and ripen well. In Western British Columbia the fruit growers do not cut back the leader at the time of planting, or at any other time. Some claim that the ideal apple tree for that climate is one which does not have a spreading top, but has a tall, strong, central leader, reaching high into the air, with many small limbs distributed evenly along it, somewhat after the fashion of our eastern shagbark hickory. It is the "two-story" tree of Professor Bailey, extended. Of course many varieties do not lend themselves to this method of training; but the aim in all cases is to get a high, thin-topped tree, so that the fruit may receive as much of the color-giving sunshine as is possible in that land of cloudy weather.

On the eastern side of the Cascades, however, fruit trees are headed low, because of the high winds prevailing in that region and because of the danger of injury from sun scald. The two extremes are 1 and 2½ ft., and 18 in. is the most common height for heading apple trees. The tops of the Inland trees are kept much thicker than those in the Coast Region and in the Atlantic States. A very diffuse and spreading habit of growth is desired from the beginning. Every effort is made to keep the trees close to the ground, and to shade the trunk. One can easily trace a connection between this system and that so common in the orchards of California where very similar, but intensified, conditions prevail. The greater difficulty in tilling orchards of such low headed trees is considered not at all commensurate with the advantages gained in freedom from sun scald, less liability of injury from high winds, and in the increased facility of harvesting and spraying. It is rare that one can find within a few hundred miles of each other such utterly dissimilar methods of horticultural practice as exist in northwestern fruit-growing.

(3) *Insects and Diseases.* Like most other newly settled countries, the Northwest was at first quite free from serious insect pests and diseases. On the strength of this experience many of the early fruit growers based the hopeful prediction that fruit pests would never be serious in the Northwest, and called to the aid of the argument certain peculiarities of climate which were supposed to be unfavorable to their development. In the hope that the Northwest could be kept free from all the orchard pests so troublesome to eastern growers, stringent laws, which aim to exclude all diseased and infested nursery stock and fruit, have been passed. All nursery stock grown in the Northwest and all that is shipped into the Northwest is supposed to be carefully inspected for injurious insects and diseases before being planted. Since over two-thirds of all the nursery stock planted in the Northwest comes from eastern nurserymen, the efforts of inspection forces have been directed thus far chiefly toward preventing infested eastern stock from being planted. It should be said that many eastern nurserymen, who have unblemished reputations for square dealing with their eastern patrons, some times ship very disreputable stock to their patrons in the far-away North west. In Washington, no firm is allowed to sell stock in the state without a license from the horticultural Commissioner. Every nurseryman who consigns stock to this state must notify the Commissioner where it is going and when it will arrive. The Commissioner then sends an inspector to examine the stock before it is planted. If it is infested with dangerous insects or diseases, it is destroyed or disinfected by the inspector, and the cost of this operation is charged to the nurserymen. If he refuses to pay this, his license is revoked.

The working out of this law has not been entirely satisfactory. A great deal of nursery stock, infested with San José Scale, Woolly Aphis, Crown Gall, Peach Borer, Pear Blight and other troubles, has come into the Northwest from the East, and much of this stock has been planted. A few lots of infested stock have been condemned and destroyed, but undoubtedly a very small proportion of the infested stock received has been detected. No doubt this nursery stock inspection has done much to prevent the introduction of orchard pests here and there, but it has not and could not keep the Northwest free from them. Practically all of the common insects and diseases of eastern orchards are now found in the Northwest. Stringent laws have failed to keep them out. The responsibility for their control now falls on the shoulders of the individual growers themselves; and this is where it always does fall, in spite of mandatory statutes. Unless they are enough alive to their own interests to take every measure necessary to protect themselves from loss, stringent laws avail little.

As would be naturally expected, the humid climate of the Coast Region is favorable for the growth of fungous diseases. Apple and Pear Scab and Brown-rot are serious. Bitter-rot is just appearing. Careful spraying keeps these diseases in check, but the frequent rains in the early part of the season make spraying less efficient and more expensive than in inland orchards. The russeting of fruit from spraying is also very common in this wet climate. A Root-rot, due to the mushroom *Agaricus melleus* has caused considerable damage to the fruit trees in the Coast Region, particularly to prunes. The New York Apple-Canker is found in old and neglected orchards; also a somewhat similar disease, known only in the Northwest, called the Dead Spot Apple-Canker. This appears as small sunken areas of dead bark, 1 to 2 in. in diameter, which are often so numerous as to girdle the trunks or scaffold limbs of young trees. Painting with Bordeaux paint, wrapping the trunks with building paper or burlap, and top-working on the more resistant varieties, are the most satisfactory methods of controlling it. The Coast Region is peculiarly affected with fungous diseases, of which these are but a few of the most serious. This will always be a serious hindrance to commercial orcharding west of the Cascade Mountains.

Coast Region orchards are not seriously infested with insects. The Codling Moth is easily controlled. The San José Scale is common, and is easily kept down with the lime-sulphur-salt spray. During all of these years, when it has been claimed that this spray could not be as effective in the East as in California because of the wetter climate, these Coast Region fruit growers have been using it with invariable success, in spite of their 30 to 60 in. of rainfall. At first the tendency there, as it now appears to be in the East, was to give this spray plenipotentiary powers against all the insect pests and diseases of fruit trees. The Washington State Board of Horticulture even recommended that all orchards be sprayed with it every year from the time of planting, whether they had the scale in them or not, simply as an insurance and general tonic. Of course this was soon found to be impracticable, and the ime-sulphur-salt spray has now fallen into its proper place as a specific for the San José Scale, and for that only—not as a general cure-all.

The Inland Valley fruit growers have practically no trouble with fungous diseases because of their very dry climate, but are greviously tormented with insects, especially the Codling Moth and Peach Tree Borer. During the past few years the Codling Moth has wrought havoc in these valleys. But a few years ago there were no wormy apples in the inland valleys. Now, at least 90 per cent. of the orchards in this region have Codling Moth in them. There are several broods each season, and the broods overlap, so that it is a continuous fight between the fruit grower and the Codling Moth from the fall of the blossoms until the last of August. In the Northwest, at least, the Codling Moth is a far more serious orchard pest than the San José Scale. Some of the best growers are able to save from 80 per cent. to 90 per cent. of their crop by giving from five to six sprayings each season, at intervals of from two to three weeks, the first spraying being given immediately after the blossoms have fallen, as in the East. This one spraying is not sufficient, however, for it is the later broods which do the most damage. Arsenite of Soda, in several formulas, is the material most commonly used. Spraying is usually supplemented by banding the trees. One large grower reports that he has trapped 4,000 Codling Moths in one season under the bands of 750 trees. Many growers now thin their apples so that no two fruits touch each other. When the fruits touch, the spray does not get in, but the Moth does. The thinning of apples is coming to be recognized as a profitable orchard practice in the Northwest, and it is one which many eastern growers might follow to advantage.

All through the inland region Pear Blight has been a terrible scourge. A conservative estimate is that 70 per cent. of all the pear trees in this region have been ruined by Blight within the past six years. Pear growers are greatly discouraged at the outlook. The probability is, however, that the disease has now exhausted its pristine virulence, and will not again be so uncontrollable. This seems to be the history of a great many insects and diseases in all parts of the country.

The orchards of the inland uplands are favored with comparative freedom from injurious insects and diseases, except Pear Blight. Apple Scab, Codling Moth, and San José Scale are present to a limited extent. The dry summers are not favorable for the growth of fungous diseases, and the cool nights and short seasons are supposed to limit insect development. Although the upland orchardists cannot expect complete immunity from insects and diseases, as many have hopefully predicted, it is quite certain that they will not be as seriously troubled with them as the fruit growers in other sections of the Northwest.

(4) *Varieties.* In the selection of varieties the Coast Region and the Inland Regions are again in marked contrast. This is particularly true of the apple, which is practically the only fruit grown commercially in all sections of the Northwest; peaches, pears, prunes and cherries are of more restricted and local culture. The varieties of apples most commonly found in Coast Region orchards are Baldwin, Rhode Island Greening, Roxbury Russet, Esopus Spitzenburg, Northern Spy, Winesap, Newton Pippin, Grimes' Golden, Bellflower and Ben Davis. Except for the last named variety, we at once recognize these as the old-time favorites which we find in the orchards of the northern and middle Atlantic States. They seem to be peculiarly adapted to seaboard conditions. Rarely are they equally successful in inland orchards.

In the orchards of both the inland valleys and inland uplands, the varieties most commonly found are Ben Davis, Gano, Rome Beauty, Jonathan, Arkansas, Lawver, Missouri Pippin, Blue Pearmain and Wagener. The last named variety is used principally as a filler. Ben Davis is undoubtedly the leading commercial variety of the Northwest today, but Rome Beauty is probably being planted now more than any other. There seems to be a growing tendency in the Northwest to disparage the extensive planting of Ben Davis for use at all seasons and in all markets. Many eastern buyers now require that at least 60 per cent. of a carload of apples be varieties other than Ben Davis; whereas they formerly accepted carloads which were 75 per cent. Ben Davis. It is now recommended that not over a fourth of the total orchard area be Ben Davis, and that this variety be restricted to two uses: first, for late winter and early spring use, when most of the higher quality varieties are gone; second, for shipping to distant markets and to countries with trying climates, where few other varieties will keep. It is felt that this variety should not be brought into competition with earlier and better quality varieties. It may be said that northwestern Ben Davis are not quite as good to eat as Ozark Ben Davis. However, they have the same "delightful sawdust flavor."

The Northwest has brought forth several varieties of more than local value. Among these may be mentioned the Bing, Olympia, Lambert, Black Republican and Hoskins cherries; the Palouse, Whitman, Yakima, Spokane and Coos River apples; the Golden Drop, Tennant and Pacific prunes; the Walla Walla and Winter Bartlett Pear, and the Early Charlotte peach.

IV. The Markets for Northwestern Fruit.

The cities of Portland, Seattle, Tacoma, Spokane, Vancouver, and Victoria are all excellent and growing markets, but they cannot consume a fiftieth part of the fruit raised in the Northwest. At the rate home-seekers are now pouring into the Northwest, this per cent. will be materially increased within the next few years. The chief markets for Northwestern fruit at present are the mining camps of Washington, Oregon, British Columbia, Montana, and the cities of the Dakotas and Minnesota. It is well known that mining camps are much better markets for fruits and vegetables, in proportion to the population, than manufacturing towns. Butte, Montana, is the center of an extensive mining district, and is one of the largest distributing centers for northwestern fruit; but Montana now has a million fruit trees coming into bearing, and these will soon claim a share of this trade.

The local towns and mining camps of the Northwest will always be important markets for northwestern fruit, but I am convinced that the great opportunity of northwestern fruit-growers is in developing a market in Alaska and the Orient. The Northwest occupies a strategic position with reference to Oriental trade. Through the wonderful inland harbor of Puget Sound will pour most of the vast volume of trade which is bound to pass between the United States and Japan, China, the Philippines and other Asiatic countries. These peoples are just beginning to feel the pulse of American industrial activity. Northwestern fruit-growers have been asking themselves, "If there are markets in the Orient for American machinery and American manufactures, why not for American fruit?" They have found that good markets for American fruit do already exist in the Orient, and that these markets can be immeasurably developed and broadened. That there has long been a waiting market in the Orient for the fresh and preserved fruits of other countries is shown by the fact that in 1899 the exportations of fruit from various sources, chiefly American, to Oriental markets were valued at about $700,000. There is a steadily increasing demand among the natives of Oriental countries for canned, dried and preserved fruits. The white population of these countries depend upon the imported fruits almost entirely to supply their tables. The tinned fruits, found in the Orient, come mostly from America, but the preserved fruits come mostly from Europe. All dried fruits shipped to the Orient should be put up in tins or glass bottles, else they will mildew. Within the past few years a good market for northwestern apples has been opened up in Siberia. Each year many apples are shipped from the Northwest to Australia, the Winesap being a special favorite for this trade. Several thousand boxes of apples, principally Ben Davis, are annually shipped to China, and invariably reach there in good condition. Here are markets which must be developed, especially for apples, prunes and dried, preserved and canned fruits. There is every reason for believing that the next quarter century will witness the building up of a large Oriental trade in American fruits and fruit products. Undoubtedly a large proportion of this fruit will come from the Northwest.

In 1900, 150,000 boxes of Pacific Coast apples were exported to Europe via New York. Northwestern fruit marketed in the East and in Europe has had to contend with what most fruit growers believe to be excessive freight rates. The transportation problem is uppermost at all horticultural meetings in the Northwest. When the freight rates are 62 per cent. of the selling price, as has been the case with fresh prunes shipped from the inland valleys to Eastern markets, northwestern fruit-growers believe they are justified in complaining. In 1900 the freight tariff on carload lots of apples from Pacific Ocean terminals and intermediate points to Missouri and Mississippi River points, and to the Atlantic seaboard cities, was $1 per 100 pounds for apples and prunes in boxes. The railroad men explain this one way or another, but most unbiased observers agree that as a rule the freight rates on northwestern fruits are exorbitant.

The apple barrel of the East is almost entirely replaced here with the bushel box. The "Standard" box is 18x11½x10½ inches. To accommodate certain sizes of fruit, there is a "Special" apple box which is 20x11x10¼ inches. These are inside measurements with end pieces ⅞ inches thick. These boxes cost about $9.00 per 100 knocked down. All filled boxes are supposed to weigh 50 pounds and contain one bushel of fruit. Pears, peaches and the choicest apples, particularly the yellow skinned varieties, are commonly wrapped before packing. The packing of fruit in tiers in these boxes gives a uniformity which it is almost impossible to secure in barrel packing. Barrels are sometimes used for shipping apples across the sea, as the salt air injures some varieties when packed in boxes; but these constitute a very small proportion of the fruit marketed.

VI. The Distinctive Features of Northwestern Fruit-Growing.

It seems to me that there are five distinctive features of northwestern fruit-growing. Eastern fruit-growers may consider each of these with profit.

(1) It places emphasis on high culture. I believe that northwestern orchards are, as a rule, tilled better, pruned better, and sprayed more thoroughly than most of the orchards in the Atlantic States. There is a special reason for this. The markets of northwestern fruit-growers are mostly distant, not near by, as in the East. They have found by dear experience that it will pay to ship long distances only the best fruit ; and the best fruit can be grown only under the best culture. Poor fruit, or even medium grade fruit, will not pay the freight.

(2) It emphasizes the importance of careful grading and tasty packing. When freight rates are 60 per cent. of the selling price there is little use in shipping poorly packed fruit. Northwestern fruit-growers have found that the way their fruit is graded and packed is fully as important as its quality. Hence they pay especial attention to securing neat packages, attractive labels, fancy wrapping paper, and aim to have absolute uniformity in the size and quality of the fruit in each package. Many of our eastern fruit-growers are distressingly lax on this vital point of attractive, uniform and conscientious packing. Northwestern fruit-growers pack well because it pays well to do do ; eastern fruit-growers can reap the same liberal reward if they choose.

(3) It emphasizes sectional horticulture. The difference in horticultural methods between the various regions of the Northwest is so marked that the fruit grower very quickly recognizes the impossibility of having uniformity in orchard practice. He learns to consider his own farm as unique, and tries to work out a system of his own. To a greater or less extent this is true of every fruit growing region. There is special need that the fact of the individuality of farms be more generally recognized in the East as well as in the West.

(4) It is reaching out for the markets of the world. Northwestern fruit-growers are selling their fine Italian prunes in Europe right under the noses of unwilling Frenchmen, who have prunes of their own to sell. They are shipping apples to Hamburg and to Hong Kong. They are bidding for the fruit trade of the 400 million Chinese, the 40 million Japanese and the 11 million Philippinos. This broad outlook on the markets of the world is one of the most striking features of northwestern fruit-growing.

(5) It is full of enthusiasm and aggressiveness. The special difficulties and uncertainties in marketing their fruit has made northwestern fruit-growers keen business men as well as skillful cultivators. Lack of business acumen in marketing is fully as often responsible for unsuccessful fruit-growing as lack of skill in culture. The horticultural meetings of the northwest are full of snap and vim ; every man seems to have a lot of questions which he wants answered right away. The eagerness of these men to learn, to find a better way than the old, is very apparent.

Generally speaking, this broad outlook, this aggressiveness and constant reaching out for the new, are the most striking features of northwestern fruit-growing. Certainly these are the things which make the deepest impression on one who has received most of his horticultural training in the more conservative east. Eastern fruit-growers have their own special difficulties. They have merits as well as shortcomings which western fruit-growers have not. Perhaps it is not fair to compare the two classes. It is no captious or critical spirit which leads me to wish that our Atlantic Coast fruit-growing might catch a little more of the enthusiasm, the aggressiveness and the open mind which characterizes the fruit-growing of the Pacific Northwest. It is but the unbiased comment of one who has observed both, and who believes that each can learn from the other.

The Chairman: Are there any other reports?

Mr. Ragan then presented the report of the committee on necrology. See page xxiii.

Robert Manning of Massachusetts: I would like to know who there is here who was a member in 1860 of the Pomological Society. I began to attend in 1860 the Pomological Society meetings in Philadelphia, and I see comparatively few here now who were there then. I have never failed a meeting for forty-four years until two years ago.

Mr. Boggs: I have a report on Tropical and Sub-Tropical Fruits, but looking over the assembly I don't see anyone who is interested in that line of work, and on behalf of the committee I would ask leave to have this report spread on the proceedings without taking up your time in reading it just now.

Secretary Taylor asked for information regarding the whereabouts of several members.

Member: Rev. Charles R. Baker of Brooklyn, N. Y., is deceased.

QUESTIONS ASKED.

Chairman: The following questions have been handed in and are now the subject of discussion:

Q. Can walnut trees 15 to 30 years old be transplanted safely?

Ans. H. E. Vandeman: I might say in answer that I do not know about the walnut tree, but pecan trees that are six inches in diameter and at least 15 years old have been transplanted in the southern part of Louisiana to my knowledge successfully by Mr. S H. James.

Q. Is phosphate rock dissolved with sulphuric acid injurious to fruit trees?

Mr. von Herff: The material mentioned is usually termed "Acid Phosphate," which constitutes the principal source of phosphoric acid in fertilizers, and is used every year in hundred thousands of tons. It may be concluded from its enormous consumption, that it is not injurious, but beneficial to crops, and no injury has been observed from its use on fruit crops. I speak, of course, about the proper use of these chemical manures; if used injudiciously, as for example in unreasonably large quantities, especially if put close to the tender roots of growing plants, they may produce injury.

Q. Is muriate of potash inferior to sulphate of potash? Is it injurious to fruit trees or fruit?

Mr. von Herff: Both sulphate of potash and muriate of potash are used in large quantities, and with beneficial effect on fruit trees. The question, as to whether the one be preferable to the other, is as yet an open one. There is never an objection made to the use of sulphate of potash on fruit crops, while there are many who claim it to be superior for fruit to the muriate of potash. This claim is made with special positiveness as regards oranges, and the best growers in Florida always use sulphate of potash for that crop. For other fruit crops the assertions are not so positive, and many growers use muriate of potash with excellent results. The question "is the sulphate of potash better for fruit than the muriate of potash," has not yet been fully decided experimentally; opinion favors the sulphate, and the grower who wishes to do the best, regardless of cost, uses the sulphate of potash for fruit.

For smoking tobacco the preference of sulphate of potash against the muriate of potash is unquestioned, the former produces a better quality than the latter.

There are instances where sulphate of potash deserves the preference over the muriate on account of soil conditions, independently of the crop to be raised. I refer particularly to soils inclined to be sour, and deficient in lime. The muriate of potash tends to increase these deficiencies by the depletion of lime in the soil through the formation of chloride of lime, which is readily removed by washing rains. The use of sulphate of potash may be preferable on such soils, even considering its higher cost, as compared with the muriate of potash.

A Member: There is a very decided opinion on the part of fruit-growers in Florida,—not only of oranges but of other varieties of fruit,—that the sulphate of potash is better for fruit bearing trees, as tending to develop higher coloring in the fruit. That is practiced by nearly every up-to-date fruit-grower in Florida. There are, however, no accurate experiments to testify as to that, but it is the general opinion. With pineapples there have been experiments and it has been determined that muriate of potash is inferior to sulphate of potash.

Q. Is nitrate of soda injurious to fruit?

Mr. von Herff: That is in about the same line as the question about the acid phosphate. Nitrate of soda can be injurious if used injudiciously; if used in excessive quantities, the result will be a too rapid and sappy growth of wood and poorly colored fruit. This does not refer to nitrate of soda alone, but to all other materials used as nitrogen-fertilizers. Every fruit-grower can regulate the nitrogen supply by judging the growth of wood or vines. If the growth is insufficient, use more nitrogen, either in the form of nitrate of soda or some other form; if the growth is too rapid, and sappy, reduce the nitrogen supply, or better still, increase the amount of potash and phosphoric acid, so that the nitrogen may be properly balanced: a good growth of healthy wood, combined with an increased yield of sound fruit, may be expected as the result.

FINAL RESOLUTIONS.

The American Pomological Society, convened in the environment in which it was cradled, recognizes in the atmosphere of Boston the aroma of a refined and ripening pomology which mellows the hearts of its membership and awakens a sweet, sympathetic and altruistic spirit.

The warm salutation, delightful courtesy and continued thoughtfulness of the membership of the Massachusetts Horticultural Society have touched our hearts and awakened our heartfelt gratitude which is hereby expressed. We are glad to be here under the roof of this thrifty and progressive Society and go we out from its doors with delightful remembrances and a delicious and stimulating optimism concerning the future of American pomology.

While recognizing the wonderful advancement of commercial fruit culture and desiring to make our deliberations useful in this marvelous field of horticultural endeavor we desire at this meeting to emphasize the thought of the organizers of our Society who enunciated clearly as the great object of the association—the promotion of the science of pomology.

We welcome to our membership and deliberations the professional horticulturists from our agricultural colleges and experiment stations, and recognize in their contributions to our deliberations most valuable aid and extend to them the freedom of our platform for giving publicity to the results of valued observations and experiments.

In the harmonious relationship existing between this Society and of the Office of Pomological Investigation of the National Bureau of Plant Industry we are enjoying rare opportunities for reaching the people and thus increasing and intensifying the usefulness of the Society.

The success of the gatherings of our Society, the harmony of our activities, and the far reaching influence of our discussions are very largely dependent upon the unselfish and unrequited service of its officers and we hereby extend to the retiring officers of the Society our heartfelt gratitude for their generous and efficient service in our behalf.

The international character of this gathering is a keen satisfaction to our membership and we earnestly desire that in our membership and transactions we shall increase the breadth and scope of our Americanism.

C. A. GARFIELD,
J. H. HALE,
E. B. WOODS,
Committee.

Adjournment took place on the adoption of the above resolutions.

A CHAPTER OF POMOLOGICAL PROGRESS

REPORT OF THE GENERAL FRUIT COMMITTEE.

The report of the General Fruit Committee which is here submitted includes reports which have been received from the various State and Provincial committees of this Society. There are comparatively few of these committees which have not sent in reports. From the reports herewith presented it appears that American Pomological industries are growing in importance from year to year. While there are some regions where little or no pomological progress is being made, and while there are a few sections in which there has been an actual decline in some special fruit industries, nevertheless on the whole there has been an increase in the capital invested in pomological industries and in the value of pomological products since the last meeting of this Society.

The growing of fruit for local markets shows a greater increase in the aggregate product than the growing of fruit for shipment to distant markets. Doubtless this condition fails to be generally appreciated because the extensive development of special lines of fruit growing within limited areas is sure to excite comment and attract attention to a much greater extent than does the greater diversified production by a large number of small growers, widely separated.

The thanks of the Society are due the chairmen of the various fruit committees for the extremely interesting and valuable reports which they have prepared.

If all of these reports, or even a part of them, could be read before the Society they would be sure to call forth much valuable discussion. It is to be regretted that the limited time available does not permit of this.

In view of the interest in amateur fruits in the vicinity of Boston it was suggested at the request of Secretary Taylor, that this side of pomology be given particular attention in the fruit reports for the Boston meeting. The replies to this request, so far as any at all were made, indicate that amateur fruit growing is receiving proportionately even less attention now than it did in the earlier days of the Society. In no report has this subject received very extended treatment.

Each chairman was urged to give consideration in his report to those matters which appeared to be of the greatest importance in the region which he represents. In order to give particular prominence to certain subjects of general interest and at the same time to provide for some degree of uniformity in the line of topics to be presented in the general report, the subjects stated below were suggested to the members of the committee for particular consideration.

Fruit Industries.—Status of pomological industries. Regions in which fruit growing is developing. Regions in which any fruit interests are declining. Statement of conditions contributing to these changes. Fruits under glass.

Marketing.—Transportation problems. Packing. Storage. Fruit growers' organizations.

Manufacturing.—Utilization of that portion of the crop not sold as fresh fruit. Canning, evaporating, jellies, fruit juices, preserves, marmalades, etc.

Varieties.—Either new or old varieties which are worthy of special remark, with statement of notable characteristics of plant or fruit.

Orchard Management.—Irrigation ; tillage, mulch, or sod ; cover crops, training, pruning, fertilizers, implements, frost protection, windbreaks, etc.

Propagation.—Stocks ; selection of seeds, buds, cuttings or cions ; strains ; sports ; methods of propagation.

Insects and diseases.—New or noteworthy information concerning plant diseases or injurious insects, and methods for combating such pests. Legislation. Inspection.

San José Scale.—Has the advent of the San José Scale discouraged the planting of orchard trees? Has it affected fruit production ? If it has detracted from the commercial value of any fruit, state the kinds and the extent to which they are effected. Give status of treatment in commercial orchards.

S. A. BEACH, Chairman, Geneva, N. Y.

NOVA SCOTIA POMOLOGICAL DISTRICT I.

1. GENERAL REPORT BY PROFESSOR F. C. SEARS, WOLFVILLE.

The fruit interests of the Province of Nova Scotia have advanced steadily in importance during the past two years. New orchards have been planted and old ones better cared for and in spite of new problems which every year present themselves the industry was never upon a better footing than it is to-day.

Among the problems that confront the fruit grower at present none seems more difficult to solve, nor promises greater gains for a satisfactory solution, than the question of an efficient transportation service for our fruit to the British markets. I believe that if the question were put to a vote nine-tenths of our fruit growers would place this question above all others in the importance of its bearing upon the profits to be derived from their business. We *can* grow more or less good fruit every year (and we usually *do* grow splendid crops) if we attend to the details of spraying and pruning and fertilizing, but no matter how good our fruit may be it is often impossible to get it landed in London or Liverpool in proper condition. The damage sustained by our fruit growers from this cause amounts every year to thousands of dollars, yet so far we have not been able to secure boats which are capable of giving a satisfactory service. It seems to be a matter in which we must very largely work out our own salvation, owing to the somewhat isolated position of the Province, and so far that salvation has not been forthcoming. The Dominion Government, through its Department of Agriculture, has been doing a great deal for the fruit growers of Canada but as yet it has *not* secured for Nova Scotia fruit an efficient, regular and reasonably cheap transportation service. This is what we need and what we must have. Our Fruit Growers Association and our Boards of Trade are interesting themselves in the matter and we shall hope to report before the next meeting of the American Pomological Society, that apples can be sent to London with reassurable expectation of their arriving in good condition.

In order to develop the fruit interests of the Province more rapidly and to test more quickly and thoroughly than private means was likely to do, the possibilities of fruit growing in sections of the Province not yet largely interested in fruit growing, the Provincial Government has been for the past two years establishing model orchards in the various counties of the Province outside of the Annapolis Valley. The intention is to establish eventually three such orchards in each county, each orchard to be approximately two acres in extent. Already twenty-three have been set and the outlook for the experiment seems very encouraging indeed. Briefly the terms upon which the orchards are established are these—the Government furnishes the nursery-stock for planting them and a spraying outfit for spraying them and they are to be managed for a period of ten years under the direction of the Secretary for Agriculture and the Director of the School of Horticulture. The owner of the land performs all labor and furnishes the necessary fertilizer, spraying materials, etc., and of course receives all the income from the plantation. The orchards are set largely to those fruits which are known to be most likely to succeed in each locality, but to a limited extent they are experimental, some of the newer and more promising fruits being set in each one. The interest aroused in the localities where these orchards have been set has been most marked and the whole scheme seems to be admirably carrying out the design of its originators, to arouse a greater interest in the subject of orcharding and to introduce better methods and better varieties.

Along with the planting of these model orchards the government has established an experimental orchard at Wolfville, Kings County, in connection with the School of Horticulture, in which new varieties of all the different fruits are being tested. Already some interesting results have been secured and the next few years should add materially to our stock of information on new sorts of fruits adapted to the Annapolis Valley. These new varieties have been secured from various parts of the United States and Canada, wherever anything promising could be found, and also quite largely from England as it was felt that the similarity in climate made it probable that varieties of fruits which succeeded there would also succeed here.

As I have said commercial orcharding has prospered wonderfully during the past two years and this year Nova Scotia has a large crop of remarkably clean fruit. Orchards are being better cared for with each year that passes. Systematic pruning and thorough spraying are gaining ground slowly year by year. And as methods slowly improve so the commercial varieties of the different fruits are very slowly changing, much more slowly than methods. The following ten varieties of apples are probably our best commercial sorts about in the order named—Baldwin, Gravenstein, Ribston Pippin, Nonpareil, Tompkins, King, Northern Spy, Blenheim, Fallawater, Stark and Golden Russet. Doubtless a good many growers would replace the last named sort with Ben Davis in making out such a list but my own opinion is that Nova Scotia ought to change varieties for the better rather than the worse in quality.

It is settled beyond controversy, I think, that Nova Scotia can grow peaches successfully on a commercial scale but growers are all at sea regarding varieties. So many trees have been planted which are untrue to name and so many more that are unsuited to our climate that we are sadly in need of more light on the subject. In the hope of supplying this we have set during the past two years about 125 varieties of peaches in the experimental orchard at the School of Horticulture.

The manufacturing of fruit into various forms is as yet in its infancy but is increasing year by year. There are several small canning factories in different parts of the Annapolis Valley, all of which are doing well and the past year a factory for the manufacture of vinegar has been established at Bridgetown which is expected to utilize some 10,000 barrels of apples yearly. I am firmly convinced that few phases of the industry are of more importance or more worthy of the earnest coöperation of fruit growers than this, for certainly if we could withhold all of our low grades of fruit and put them upon the market in some manufactured form the price of good fruit would be materially enhanced. Indeed I believe it often happens that the money received for shipments of poor fruit is more than counterbalanced by the loss on good fruit due to the consequent depression of the market.

So far as known the San José Scale has never been found in Nova Scotia. For two seasons the government employed an expert entomologist from Cornell University, who examined nursery stock coming into the Province and inspected orchards already set, and the writer has each year visited many parts of nearly every country in the Province yet nothing worse than the Forbes' and Putnams' scales has been discovered. For the past three years the eye-spotted bud-moth, *Metocera ocellana*, has been very abundant and has done much damage. Doubtless it was here to a greater or less extent before that, but its ravages have only recently become noticeable or at least noticed. Passing the winter as it does in a partially developed state upon the twigs it is ready for business at the very first approach of warm weather and usually gains entrance to the buds before any spraying is attempted. Careful observation has shown that this entering of the buds varies with the season but usually occurs about May 5th and by spraying at that date with paris green, using 1 lb. per 40 gal. cask of water, the ravages of this insect have been fully controlled. The necessity for this exceptionally heavy dose of paris green is that the larvæ eat so very little in entering the bud that this little must be highly seasoned to be effective. The Cigar-case bearer has also been troublesome, especially in the western part of the Annapolis Valley and the canker worm has been very noticably on the increase for the past year or two but otherwise our insect enemies are about as usual.

2. List of Fruits Starred for Nova Scotia.

By R. W. Starr, Wolfville, N. S.

APPLES.

Names.	Remarks.
Alexander*	Hardy, showy, good market qualities.
American Golden*	Large, handsome, requires high cultivation, an amateur's variety.
Arctic†	Promising.
Baldwin**	Standard commercial sort, well known.
Blenheim**	Standard, hardy, vigorous, resists disease, good market sort.
Ben Davis*	Largely planted, carries well, has sold well, handsome, poor quality.
Blue Pearmain	Good in some localities, very poor in others, best on limestone soils.
Bethel	Do not recommend it, not profitable.
Bough *Sweet***	Best summer sweet, good in local markets.
Beitigheimer†	Large, handsome, coarse, drops easily, do not think it will be liked.
Broadwell	Good, but dropped out of cultivation, few sweets grown.
Canada Baldwin†	Soft flesh, rather inclined to black spot.
Canada Reinette*	Good table apple, but not profitable.
Chenango*	Good for home and nearby market, but not for export.
Clyde Beauty*	Well liked by some growers, not generally grown.
Cooper's Market*	Coming into favor as late market sort for export.
Early Harvest*	Best early table apple, but very subject to black spot.
Early Strawberry*	Fair quality, too tender for market.
English Russet*	Good bearer, long keeper, reliable shipper, good market.

Esopus Spitzenburg*	First class, on deep warm soils with good cultivation, but not a favorite with all.
Fallawater**	Standard, favorite in London, good shipper, best on warm dry soil, does best top grafted on strong hardy stock.
Fall Harvey*	Good for local market, but not suited for export.
Fall Jenneting*	Has been quite largely grown, but is now replaced by Gravenstein.
Fall Pippin*	Not now planted, bears well, but black spots badly.
Famuse*	Has been a favorite, but nearly gone out of cultivation from black spot.
Gano†	On trial, fear the quality is too poor to make a success.
Gideon†	On trial, do not think that it will be wanted.
Golden Russet**	Standard, commercial sort, top market prices, not a heavy cropper.
Gravenstein**	Standard, best all round apple of its season, great cropper.
Green Newtown	Does not mature, lacks flavor, bears well.
Grimes Golden*	Grows and bears well, but does not suit the export market.
Haas	Grows and bears well, discarded for lack of quality.
Hibernal	Not wanted.
Hubbardston**	Well liked, does best on warm soil with high cultivation.
Hunt Russet*	Grows and bears well, but is not a favorite market sort.
Huntsman	Tried, not wanted.
Irish Peach*	Not profitable.
Ingram †	On trial, too soon to decide.
Jewett (Red)*	Good, reliable but not much grown.
Jonathan, *Nodhead*†	Very promising.
July 4th	Lacks quality.
Keswick (Codlin)*	Valued for exposed situations near the sea.
Lady Sweet*	Fine quality, but not a commercial sort.
Late Strawberry*	These do fairly well in their season, but are not wanted, as we have better varietias of same season.
Lawver*	
Lowell*	
Louise (Princess)†	So far these two are doing well, but there is a suspicion of weakness as to black spot, owing to the Fameuse blood.
McIntosh **	
Maiden Blush*	Bears well, but is not a favorite for export.
Mann*	Has been quite largely planted, but is not now so well liked. Tree is not hardy.
Margaret*	Very early. Valued for home use and nearby market.
Minister	Discarded, not profitable for export.
Mother*	Good dessert, but not profitable as a commercial sort.
Munson (sweet)*	One of the best of the season, unsuited for export.
Newtown Spitz'	Discarded. Spots and cracks badly.
Northern Spy**	Standard, needs warm soil, high cultivation, annual pruning.
Ohio Nonpariel*	Very handsome, fine quality, vigorous, unproductive.
Oldenburg*	Hardy, great bearer, short season, not suited for export.
Ontario**	New, bears young, very promising.
Peach of Montreal*	Only suited for nearby market.

Peck Pleasant*	Not commonly grown, but generally well liked.
Pewaukee*	Bears well, drops badly, is not a favorite market sort.
Pomme Gris*	Best dessert, brings high prices, needs high cultivation.
Porter*	Very little grown now, superceded by Gravenstein.
Primate*	Good for dessert and family use, ripens unevenly.
Pumpkin Sweet*	Profitable where there is a market for sweet apples.
Rambo	Discarded, not wanted in our markets.
Ramsel Sweet	" " "
Red Astrachan*	Most popular early sort.
Red Canada*	Rather shy bearer, not profitable.
Red June	Unprofitable.
Rhode Island *Greening***	Standard, but not as much planted as formerly, but is likely to come into favor again.
Ribston**	Standard, one of our best market and export varieties, reliable annual, but not very heavy cropper.
Rome Beauty*	Much liked by some growers, not common.
Roxbury, *Rox' Russet* *Nonpariel of N. S.***	Standard, hardy, vigorous, good bearer, long keeper, trees planted by late Col. John Burbridge in 1766 still bearing full crops.
Salome†	Does not seem to be a favorite.
St. Lawrence*	Bears well, does not carry well, very tender flesh.
Scott Winter*	Very hardy, useful in some localities, not a commercial sort here.
Shiawassee*	Handsome, good quality, tender flesh, apt to "black spot," like all with Fameuse blood.
Smith's Cider	Tried, not wanted.
Sops of Wine	" " "
Stark**	Rapidly coming into favor. Hardy, vigorous, good bearer, good market qualities.
Starkey	Tried, not wanted.
Sutton†	On trial, promising.
Swaar	Tried, not profitable.
Swazie*	Not much grown, fine dessert, vigorous, bears well.
Tetofski	Not wanted.
Talman Sweet*	Good long keeping sweet for home use and market. Not wanted for export.
Tompkins King**	Standard for home and export, demands warm deep soil with high, careful cultivation.
Twenty Ounce (Cayuga)*	Now unpopular, cannot compete with Gravenstein.
Wagener**	Rapidly coming into favor, bears early and heavily, needs high feeding, is quite dwarfish, much used as a "filler."
Walbridge	Not wanted.
Washington*	First quality for dessert, not profitable commercially.
Wealthy*	Handsome, hardy. In some localities *may* take precedence of Gravenstein.
Westfield (Seek)*	Good reliable old-fashioned sort, not much planted now.
Williams (favorite)*	Good early market variety.
Winter St. Lawrence†	Has not yet shown much to recommend.
Wolf River†	So far has been a success. Takes well in market.
Yellow Belleflower *Bishop Pippin***	Always wanted for local markets, but not for export, subject to black spot, needs careful spraying.

Yellow Newtown.........Does not mature sufficiently to get the proper flavor.

Yellow Transparent*....Very early sort, only suited for nearby market. Tender flesh, should be packed in small baskets as they ripen.

York Imperial†.........Long keeper, good bearer. Promising.

SOME VARIETIES OF APPLES NOT ON THE SOCIETY'S LIST.

Banks.............. ...A bud sport from Gravenstein, much the same in season and flavor, but bright red, less ribbed, more regular in shape, and generally a little smaller in size. First noticed and propagated by C. E. Banks of Berwick, Kings Co., N. S. It is well liked, and is being quite largely planted.

Cox Orange.............A noted English dessert variety, doing remarkably well on warm deep soils. Like most English sorts, it gets more color here than in its native habitat and is frequently nearly covered with red. It does not make a very large tree if on its own stock, but does well when top grafted on stronger growers. It has firm, crisp flesh, carries well, and will keep until midwinter.

Cornish Aromatic.......English. A medium sized red apple of fine flavor, in season from April to June without losing quality; a good bearer, but feeble grower; should be top grafted on stronger stock, say Ben Davis; will respond to good cultivation and high feeding. As a dessert apple it is one of the best of the long keepers.

Boskoop (Belle d')......German. So far as tried it has proved well worthy of extended cultivation, appears a strong grower and early bearer. Fruit is large, handsome, red russet, with rich, aromatic, acid flavor, will keep about with Baldwin.

Red Russet..... ....An old apple introduced many years ago but neglected. Lately it is coming rapidly into favor on the light, sandy loams of western Kings Co., and is making good prices in London, is a good bearer and carries well.

Victoria................A promising apple of the Fameuse type, rather earlier than Fameuse but keeps well into the winter. Brilliant red in color, flesh sometimes stained, quality very good to best, but like all of that type, it is subject to "black spot" and must be carefully sprayed.

Wellington.............English. A strong grower, good bearer, large, handsome fruit, greenish yellow with red cheek, quite acid but rich, much in demand in London market for culinary uses, and makes good prices when clean and bright, but is rather subject to "black spot."

Hurlbut................This variety is coming into favor with growers. It is very vigorous, a great cropper. Fruit is good size, handsome, and although not first class it makes fair prices and carries well.

PEARS.

Andrews ....Not liked.

Angouleme (Duchess de)Not profitable, except on Quince stock.

Anjou**............... Good winter sort, needs high cultivation.

Bartlett** ....Best of its season.

Bloodgood* ....A good pear but not much grown.

Bosc**................. Fine quality, reliable when well cultivated.

Brandywine*	Too small for profitable market sort.
Buffum*	Too small for profitable market sort.
Clairgeau**	Good market sort. Grand cropper.
Clapp Favorite**	Very hardy, handsome, profitable market sort.
Comice (Doyenne du)**	Large, handsome, good bearer, sells well.
Diel**	Good late autumn.
Drouard (President) †	Has not yet proved its value.
Easter (Beurre)*	Bears well, but does not mature to get full flavor.
Flemish Beauty*	Hardy good bearer, spots and cracks badly, needs careful spraying.
Hardy (Beurre)**	First class in its season.
Howell**	Profitable market sort, reliable cropper.
Idaho†	On trial. Fear it will not equal others of its season.
Kieffer*	Bears well. Quality poor. Only wanted for canning.
Kirtland*	Good table sort for amateurs, not profitable for market.
Lawrence**	Good not grown as much as it should be.
Lawson†	Handsome bears well, poor quality.
Louise (Bonne de Jersey)*	Not as much planted as a few years since, needs careful treatment.
Lucrative (Belle)*	An old sort not much grown now but good.
Marie Louise*	Good for dessert, feeble grower.
Mount Vernon	Not a success.
Napoleon*	An old favorite, but not now much grown.
Onondaga**	Good bearer, reliable.
Osband (summer)	Has been grown largely but is now discarded.
Paradise (d Automne)*	Fine for dessert.
Pound*	Great bearer, good for baking and canning.
Rostiner*	Good for family use too small for market.
Seckel	Not a suceess except on warm soils, highly cultivated.
Sheldon**	Good quality sells well in market.
Souvenir (duCongress)**	Strong grower, good bearer, good market.
Stevens**	Good quality bears well, sells well.
Summer Doyenne*	Very early, good for nearby market.
Vermont Beauty†	On trial, promising.
Vicar*	Great bearer, only suitable for winter cooking.
Wilder Early†	On trial, too soon to express opinion.
Winter Nelis**	One of the best of the season.

PLUMS, *P. Domestica.*

Archduke*
Arctic**
Bavay**
Bradshaw**
Columbia*
Damson**
Diamond*
Duane Purple*
Englebert*
German Prune**
Glass*
Golden Drop**
Grand Duke**
Green Gage**
Gueii*
Hand*
Imperial Gage**
Italian Prune**
Jefferson**
Lombard**
Monarch**
Orleans*
Pond*
Prince*
Quackenboss**
Saunders**
Shropshire Damson**
Sharp, *Victoria***
Smith Orleans**
Wales**
Washington**
Yellow Egg**

P. TRIFLORA.

Abundance**
Burbank**
Red June**
Wickson† ....Tender.
Willard†....................Not liked.

NEW BRUNSWICK—POMOLOGICAL DISTRICT 1.

S. L. PETERS, QUEENSTOWN.

Since reporting two years ago on the general fruit conditions of New Brunswick I am glad to say, that steady progress has been made all along the lines of fruit culture. A fair acreage has been added to our orchards, while those previously planted out have received better attention. Farmers do not find it difficult to secure all the nursery stock they require from reliable growers, within the Dominion and guaranteed absolutely free, from the San José scale, so much to be dreaded. The very best trees (shapely growth and in fine condition) can be had delivered at the farmer's door for $25.00 per hundred, and in smaller lots for 30 cents each. Our people are more thoroughly realizing the fact that success in orcharding largely depends on care and cultivation—with proper pruning and liberal fertilization. So far as my knowledge extends we have not yet reached the point recommended by many: that no crop except fruit should be taken from the orchard, as it is the common practice to manure our orchards with stable manure and planting with potatoes, turnips or mangles as a hoed crop. The splendid displays of fruit at our fall exhibitions and the keen competition among fruit growers has greatly stimulated the fruit growing interest and show the possibilities of all parts of the province to produce excellent samples of many varieties of apples.

The apple crop of the present year will not be large (possibly 40 per cent. of an average) crop, owing to the frosts, during blossom season. The fruit, however, that we have, is superior to any that we have had for the past ten years at least, beautifully formed, and entirely free from scab. These remarks will also apply to our pears, except that the blossoms stood the frosts better than the apple, and in consequence are bearing proportionately heavier. Spraying is being practiced by a few of our orchardists. The present season has been so very dry that there has not been the usual fungus growth, and unsprayed orchards are showing up very satisfactorily. During the present season the Government has sent fruit experts to some of the best fruit growing sections, giving practical illustrations in pruning and spraying and giving general instructions in orchard management, holding these institutes or meetings in the orchards. These meetings were largely attended and awakened a good deal of interest and will no doubt bear good fruit. Since my last report there has been little introduction of new varieties of apples.

The "fruit marks act" passed by the Dominion Parliment is becoming an important factor in the better grading and packing of our apples and we hope that at no distant day, the man who grows and packs his fruit for market will be pleased to meet the customer to whom he sold it.

Small Fruits.—Are quite as extensively grown as formerly. The yield, however, this year was less than usual, on account of the extreme dry weather during the fruiting season.

VERMONT—POMOLOGICAL DISTRICTS 1 AND 2

By D. C. Hicks, North Clarendon, Vt.

In the past two years there has been no marked change in the status of fruit growing in Vermont. The 1902 fruit crop, as a whole, was not a very satisfactory one though small fruits of all kinds were abundant and brought good prices. This class of fruit is all sold in local markets. Cherries, plums, and pears were very light crops, the apple crop was an average one in quantity but poor in quality. Many varieties were very badly affected with scab, and in orchards where persistent spraying was not practiced, insect foes did much damage. Summer and fall varieties sold very slowly at $1.00 to $1.50 per barrel; fancy, high colored winter varieties (N. Spy, Sutton, Canada Red, Shiawasse, King and Spitzenburg) brought from $2.50 to $3.00; those that held for better late winter and spring prices, did not realize. The present season (1903) up to the date of this report (Sept. 1st) has been one of many discouragements to the fruit-growers; the winter while not unseasonably cold, was for some reason very trying on fruit trees, vines and plants. Thus weakened they were unable to withstand the *cold, dry* spring that followed and all kinds of small fruits have been failures; except in a few isolated cases all early blooming cherries, plums, pears and apples were killed, by the succession of severe frosts, of late April and early May. My sub-Committee reports from the different sections of the state indicate that for the whole state, the apple crop will be 50 per cent. of last year's and of excellent quality; scab and other fungous diseases are almost entirely absent. The abundant and healthy foliage is in marked contrast to seasons of 1901–2. The local markets are easily taking all the fruits that are brought to them and at good prices; summer apples bring $2.50 to $3.00 per barrel and are in short supply.

We are still far behind some of our sister states in the methods used in grading and packing fruit for market. Small fruits are almost invariably put upon the market in the quart basket, but the basket is not always of the standard size; very few use the pint basket for their raspberries which for many markets is a costly mistake. There is no uniformity of packages for the plum and cherry, the 12 quart peach basket, grape and the standard quart are all in use. Apples are usually handled in barrels, a proper method, if the barrels are of uniform capacity. With a few exceptions, in the large commercial orchards of the lower Champlain Valley, this is not the case. They are usually secured from the local merchant and have a wide range of capacities; a few use the bushel box for a retail trade and for storage of late keeping varieties. Our State Horticultural Society should bestir itself in this matter and be prepared to have introduced in the next session of our State Assembly, bills that shall establish a uniform package and rules for grading and inspection. A successful industry can only be built up when the mutual interests of the producer and consumer are carefully guarded and protected; Vermont pomologists have been slow to realize this important fact, but the awakening has come, and I trust that soon we shall be in line with our sister commonwealth, Canada. There has been quite an increase in storage facilities since my last report, after careful inquiry and observations, covering the best fruit sections, I estimate that such facilities have increased 30 per cent. since 1900, and better services are being given by the city cold storage plants. Still there is yet to be learned many lessons in this field of knowledge, covering degrees of temperature, ripeness, best methods of packing, etc. More attention is being paid each year to the spraying problem; the compressed air machine is being thoroughly tested by growers of orchard and small fruits and generally, I think, with good results. The use of prepared fungicides and insecticides is on the increase and the important lesson is being learned that "an ounce of prevention is worth a pound of cure." The working up of the surplus products of the orchard is mostly done by the cider mills and jelly plants. Commercial evaporating has hardly begun as yet in our State, but in the near future I expect to see canning and evaporating plants in all the principal orchard sections.

Those important topics to the fruit-grower, cultivation, cover-crops, pruning, wind breaks, etc., have been clearly and forcibly discussed in the annual meetings of the State Horticultural Society in the past few years, with results that are gratifying to even a casual observer.

It seems strange that Vermont, until recently, without horticultural recognition beyond her own border, should have done so much, through her amateurs, for the betterment of her fields, gardens and orchards. Among those originations, that have not only benefited the state, but the country at large, I will mention, the Early Rose, Early Vermont, Snowflake, Green Mountain, Delaware, Rutland, Rose and Chas. Downing Potatoes; Green Mountain Squash; Extra Early Vermont Sweet Corn; Horticultural Lima Beans; Nott's Excelsior and Horsford's Market Garden Peas; Imperial Barley; Vermont Beauty and Grand Isle Pears; Garden Royal, Tinmouth and Bethel apples and the Imperial Tomato; the amateur worker and his works, we trust may bless in the future as in the past.

I take an optimistic view of the grand possibilities of our country's horticulture, in these opening years of the 20th century, and old Vermont will not be a laggard in the ranks. In the last decade we have seen Vermont butter, cheese, honey and maple sugar jump to the front in the city markets, and the next product from the Green Mountain State to line up with these will be Vermont Apples. We have the soil, we have the climate, and when we get a little more knowledge we can grow the best apples in the world.

North Clarendon, Vt., Sept. 7th, 1903.

MAINE POMOLOGICAL DISTRICT.

By D. H. Knowlton, Chairman, Farmington, Me.

Fruit growing began with the planting of seeds from which grew healthy, vigorous apple and pear trees. These in due time bore fruit in abundance, and thus it became known that these fruits could be successfully grown in the new country. Little by little the best varieties were selected and grafted long before the railroads trespassed upon our domains. These were found very satisfactory for the family, but when the railroads opened up distant markets for Maine farm crops, fruit growing proved one of the most profitable branches of farming.

Factors Influencing Fruit Culture.

The Maine State Pomological Society.—In 1873 a few men, realizing that the best apples could be successfully grown in the State, met in the town of Winthrop and organized the Maine State Pomological Society. Nothing but the enthusiasm of these men kept the Society in existence for the first ten years. Two of the original officers of the Society are still occupying the same official positions in the Society and realize fully how hard the struggle has been. The membership was small, and the five hundred dollars received from the State was never enough to run the Society, but these devoted men freely gave their time, and often paid their own bills to bring the Society into touch with the people. Later the State increased the stipend to one thousand dollars, which with the amount derived from other sources has placed the Society on a solid financial basis though there are many ways in which the Society could do much more to promote the interests it was created to represent. It has won the confidence of the State, and although it has never had a large membership, it has been a most valuable medium for promoting the fruit interests of the State.

The Society has held an annual meeting and exhibition of fruit without interruption. The annual meetings have steadily grown in size of attendance and exhibits, so that now only the largest towns can furnish sufficient accommodations.

The Experiment Station.—Another agency that deserves mention in this connection is our Experiment Station and the University of Maine under which its work is carried forward. Since its establishment its experiment grounds have been at the service of the fruit growers, and its work in their behalf has been wisely directed. The fruit grounds have been a most valuable lesson field for all who intelligently sought knowledge of the best ways and means of culture.

Soil and Climatic Conditions.—Climatic and soil conditions are very favorable for apple culture. Although our winters are always cold the trees are rarely injured by the cold of winter or the frosts of spring. This year is the first in my recollection when apples have been injured by spring frosts, and this year the injury was limited to the lowlands, for the State will produce fully 60 per cent. of a full crop of apples. The fruit when matured is highly colored and unsurpassed in keeping qualities. Good orchard land is cheap, and under modern culture the trees grow rapidly and are productive. It takes a few years longer to grow the tree to a bearing age, but once grown the trees have the greatest staying qualities and are long livers. Portland, one of the largest export points for apples, is easily reached by rail and the freight haul is a short one. Under these favorable conditions Maine offers rare opportunities for those who wish to engage largely in growing apples.

How Many Apples we Raise.—There are few large orchards, the largest one in the State containing about 6,000 trees. Perhaps this may be due somewhat to the efforts of the Pomological Society to encourage people in the State to raise enough fruit for home use, and when the Society was organized there were many in the State who did not do that. At the present time there are few owning land who do not grow enough fruit for home use, and the surplus whatever that may be is for market. At the same time the Society has kept constantly before the public the importance of the commercial side of orcharding.

The apple crop in 1896 was estimated as high as a million and a half barrels, but this estimate included all the apples grown, while the marketable crop would probably not exceed one-half that amount. From recent data which I consider as reliable as any available I submit the following figures for fruit sold out of the State: 1899, 411,000 barrels. 1900, 672,000 barrels. 1901, 577,000 barrels. 1902, 308,000. These figures include only the green fruit marketable. The export figures from Portland may not confirm them, but it should be borne in mind that apples from other States are shipped from Portland and some from Canada, while many of the Maine apples are shipped to Europe from Boston, or sent by rail to other parts of the United States.

Apple Products.—Of the apples not marketable in green state many have been evaporated and canned, but it can hardly be said that evaporating and canning have as yet received the attention their commercial importance warrants. Cider-making is not in general favor among fruit-growers in prohibition Maine, and a large part of the vinegar used in the State comes from somewhere else. Those, however, who have given these industries intelligent attention have found them profitable. The utilizing of all the crop has in some way formed a conspicuous part in all public programs where fruit matters are discussed. The same may be said of apple jelly, for which the Pomological Society has offered liberal premiums at all recent exhibitions and upon which subject more or less papers have been read from time to time. This effort has encouraged many farmers' wives to make jelly for their own use and in several notable instances a market has been found for all they would offer at a handsome price. Along this line it is gratifying to note that many of the local agricultural societies are offering premiums for these goods. This shows that the effort originating with the Pomological Society is meeting with approval and doing its work among the people of the State.

Progress in Other Directions.—Since the American Pomological Society met in Boston, there has been increased interest in fruit culture in Maine. Culture, spraying, storage and marketing of fruit, in one way or another, have been discussed not only at special fruit meetings but at the farmers' institutes, and in the grange.

Since the last Boston meeting, through the efforts of our people, profitable fruit growing has been extended into Aroostook County in our State, fully a hundred miles north of what was then supposed to be the northern limit. This most northern county now produces more or less apples for market, and it is only a few years since apples were imported from the more southern counties of the State. I am unable to give the names of all the popular varieties grown there, but among them are Duchess, Wealthy, Dudley, Alexander, several Russian varieties and others that they have been encouraged to experiment with. Perhaps apple growing there will never equal the Aroostook potatoes, but it is a great boon to the county to raise their own fruit as they now do.

What Troubles us Most Now.—Most of the Maine transportation companies are serving the fruit growers satisfactorily, but still the transportation problem is all the time coming up at our fruit meetings. A couple of years ago the writer had two barrels of apples, one he packed for the Liverpool market and the other for Chicago friends. They left town on the same train, and in about ten days the first barrel reached its destination, while the Chicago barrel was on the way for three weeks. The freight on the Liverpool barrel was 59 cents, while the freight on the Chicago barrel was $1.05.

Maine apple growers have for market all the way from a few barrels up to several thousands each. The larger growers in some way have provided themselves with storehouses for their fruit. The small growers cannot afford a fruit house and so have either stored the apples in the house cellars or sold them to any buyer in the fall who came around. Neither plan is altogether satisfactory. When the apples are stored in the ordinary cellar there is quite a shrinkage when the fruit comes to be put for market, and the extra cost of handling becomes an important item. The writer thinks the economical storage of apples can easily be secured in Maine without the use of either ice or chemicals, but the difficulty thus far has been to obtain the capital necessary to secure the erection of suitable buildings at central points. The farmers are too much afraid of one another as yet to do it for themselves and for some reason there have not as yet been sufficient inducements offered for capitalists to undertake their construction and operation.

Culture of the Blueberry.—There has sprung up in Washington County an important industry in canning the blueberry that grows on the plains where in recent years the forests refused to grow. Several large companies are engaged in buying and marketing these berries. Much of the product is put up in the ordinary berry baskets and sold in green state, but a large part is canned. The industry represents a value of $100,000 to $150,000 annually. In view of what these packers were doing the possibility of utilizing other waste lands in the State was suggested as well as the domestication of the blueberry. Prof. Munson of the Experiment Station began an investigation of the industry several years since, and he advises me that he is still at work upon it. It is his purpose to get all the promising species together, but as yet *Vaccinium corymbosum* is about the only species that is at all profitable under cultivation. Mr. George W. Spaulding of North Anson has made a success of cultivating this species for several years. Prof. Munson says the industry is now largely a matter of management rather than of culture. His investigation warrants him in saying, "there is abundant opportunity for the development of the industry in the western part of the State until it shall rival in the importance and extent that of Washington County."

NEW YORK--POMOLOGICAL DISTRICTS NOS. 1, 2 AND 3.

BY WILLIS T. MANN, CHAIRMAN, BARKER, NIAGARA CO., ASSISTED BY EDWARD VAN ALSTYNE, KINDERHOOK, COLUMBIA CO., IRVING A. WILCOX, PORTLAND, CHAUTAUQUA CO., THOMAS B. WILSON, HALLS CORNERS, ONTARIO CO.

In General.—The pomological interests of the State of New York are in a healthy condition of progress and development. This progressive development is manifest not only in a constantly increasing acreage of orchards but, perhaps, to an even greater extent in the increasing intelligence and technical skill with which orchards are being managed. While the difficulties of production and marketing are continually increasing and presenting new problems yet growers are meeting them with ever increasing success, and confidence in their ability to control adverse conditions; and the prevaling sentiment, in regard to the future, is optimistic. This feeling, no doubt, is strengthened by the general belief that the soil and climatic conditions of our state are peculiarly favorable for the production of fruit of the highest qualities, and also that our location with reference to the great markets of our own country and of Europe affords especial advantages in the marketing of our products.

Statistical.—The magnitude of the fruit interests of the state, is partially, though not wholly, reflected in the report of the twelfth census of the United States. We say "partially" because the census is taken for the "off-year" for apples in our state and really shows the minimum rather than the maximum crop. A careful computation based upon the census report and the final report of the Division of Statistics for the census year shows that the full, or normal, apple crop for our state approximates 52,000,000 bushels, which is an average of about three and one-half bushels per tree of bearing age. A like computation for each of the states shows that while our state ranks second in number of bearing trees, yet in productive capacity it is far in the lead.

The number of bearing trees of the various kinds of fruits raised in the State in the years 1890 and 1900 and the increase during the decade is shown in the following table:

	1890.	1900.	Increase.
Apples	14,428,381	15,054,832	626,451
Peaches	1,014,110	2,522,729	1,508,619
Pears	1,173,206	2,183,909	1,010,703
Plums	504,365	988,147	483,782
Cherries	391,446	539,742	148,296
Apricots	6,540	25,606	19,006
Unclassified, mainly quinces		155,876	

This table reflects the discouraged condition of apple growers during the years immediately preceding and following the beginning of the decade, owing to the great increase of insects and fungus diseases and the general neglect of orchards, but, thanks to scientific investigations and improved methods of management, orchards have become much more productive and profitable; in fact, under intelligent management apple orchards have been made to produce a net income during a series of years that would justify a valuation of a thousand dollars or more per acre.

As a result of the generally profitable condition of apple orchards during recent years, there has been a revival of interest in apple planting and many young orchards are being set, particularly in the counties bordering Lake Ontario on the south and in Central New York, and in the Hudson Valley.

Orchard Tendencies.—An important feature in the planting of young orchards is a tendency to lower heads. It has become generally recognized that the orchard is planted for the fruit it will produce and that farm crops have no place in it after the first two or three years, hence the high top is not necessary. The low head is easier to spray, and the fruit is less liable to be blown off by strong winds and can be harvested more cheaply. Moreover the low-headed tree seems to bear at an earlier age. While formerly it was considered necessary to wait fifteen or twenty years for a profitable crop of apples, it is being found that by training low they come into bearing at a much earlier age. In the so-called "sod-mulch" system, by which some individuals have been very successful in producing crops of fruit on very young trees, it is probable the success is in part due to the low-training as in that system the trees are allowed to branch from the ground. In the highly tilled orchards of Western New York low trained trees of the standard varieties have been brought into bearing at five years of age. The fact that certain summer and early autumn apples like the Duchess and Wealthy and long keepers of the Ben Davis type begin profitable bearing at an earlier age than many of our standard varieties, has led to an undue planting of these classes. It should not be forgotten that our commercial supremacy as an apple state is based on long keeping apples of good and high quality.

Adaptations.—A further notable fact seems to be an increased tendency to concentration of effort both in reference to locality, and to individual. The fruit grower is becoming more and more a specialist in a broad sense, that is, while not confining his operations to a single class of fruits, he is giving increased attention to fruit growing and less to general farming. while the general farmer whose fruit interests are of secondary importance is becoming less and less a factor of commercial importance. This is due no doubt to the greater skill and intelligence required to cope successfully with the increased difficulties of production. The same influences tend to the concentration of effort to favored localities. For instance in the famous grape belt of Chautauqua County, while all the natural conditions are favorable to the growth of the apple, yet this fruit, so profitable in other sections, is totally neglected and even vigorous orchards are being removed to make room for the grape.

In certain sections of the Hudson Valley where the Newton Pippin apple reaches a high degree of perfection and peaches attain a superior excellence of flavor, particular attention is given to these fruits in the restricted areas where they may be grown.

Also in the lake counties of Western New York fruit growing is becoming more and more a special line of farming and the values of farm property are largely dependent on the amount and character of the orchards. While this tendency to concentration is generally apparent in the fruit belts, yet, individual growers as a rule do not confine their efforts to a single kind or class of fruit but, seek to produce as many different kinds as practicable.

This tendency to concentration has resulted in strengthening the commercial idea which has found expression in the organization of the New York State Fruit Growers' Association: A society that was organized to protect and advance the commercial interests of fruit growers and has met popular favor as is evidenced by its large and growing membership.

The interests of amateur growers are fully met in the work of The Western New York Horticultural Society which has long been a leader in horticultural thought and progress.

Orchard management.—In the management of the soil, clean tillage during the fore-part of the season followed with a cover crop is the approved method and is generally followed more or less faithfully by the best growers, though in individual cases various other methods have been followed very successfully so that it is recognized that it is not so much a question of method as it is one of conditions, and where the natural conditions are favorable for the vigor and productiveness of the orchard, tillage is a needless expense.

Under the thorough tillage system, commercial fertilizers often fail to give profitable results and they are less used than formerly. This is particularly true with reference to potash, though phosphoric acid often shows a secondary benefit in its effect on the cover crop. Farm manures are commonly used with profit where cover crops are not employed. For the cover crop, crimson clover is being displaced in popular favor by the common red and so-called mammoth red clovers which are found to be much more reliable in our climate and adapted to heavy as well as light soils.

For the protection of trees and fruit from insects and fungus diseases, spraying is almost universally employed and in the great apple belt of Western New York power sprayers, both steam and gasoline are rapidly increasing in numbers and are being recognized as an indispensable aid in the control of these parasites. There is, however, still too much careless work done and in seasons of unusual development of these parasites much damage results from their depredations.

Diseases.—Such was the season of 1902 when, owing to exceptional circumstances, the apple scab was widely prevalent, and both growers and dealers suffered great losses, the growers through direct damage to the fruit, and the dealers through improper grading and marketing. Much fruit placed in storage which was badly infested with scab developed a secondary fungus, known as "pink-rot," which destroyed the value of the fruit. In the effort to avoid serious loss it is reported that many dealers worked off much of this damaged fruit under cover of better grades and thus greatly injured the reputation of New York State fruit and demoralized the market for our better grades.

Marketing—This whole subject of grading and marketing deserves the serious consideration of our fruit growers. Under present conditions grade names have little or no significance and each package must be inspected to determine its value unless it has the brand of some well-known grower who has attained a reputation for strict honesty in grading. Not only are the dealers largely responsible in this matter of grading but it is also charged that much fruit imported from other sections is transferred to packages in local use and labelled "New York State Fruit." We believe that for the protection of our fruit growers these matters should be corrected and that grades and grade names should be established and protected so that packages of New York State fruit should command the confidence of the trade and of consumers. Such a result would not only enhance our reputation but would greatly increase the value of our products.

Storage houses, both common and chemical, have greatly increased in number and capacity, a fact that has in some degree lessened the tension of the transportation problem, still it is often difficult to secure cars for the prompt shipment of our products. The inability also to secure rapid transportation of our more perishable fruits, especially after leaving main lines of traffic, often causes serious loss to shippers and prevents proper distribution.

Insects.—The San José scale unfortunately gained a firm foot-hold in various parts of the state by the distribution of infested nursery stock. The agitation produced by the discovery of its introduction into our orchards has resulted in a strong inspection law, which provides for the inspection of both nurseries and orchards. Under the operation of this law the danger of further spread from our nurseries is reduced to a minimum and the fruit grower is aided in detecting its presence at an early stage while it is still possible in many cases to eradicate it, or at least to greatly check its progress. It has not spread as rapidly as anticipated and much less alarm is now felt than formerly, though its general eradication is no longer hoped for. It is believed, however, that by improved methods of treatment it may be controlled. Remedies are still in the experimental stage. It is noticed concerning the manufacture of fruit products, that canning factories are increasing in number and capacity, a fact that ensures an increasing demand for fruits for this purpose.

Varieties.—It is said that the Kieffer pear is losing favor for canning, the Bartlett being preferred. The demand for sour cherries, particularly the Montmorency is increasing. These factories also consume large quantities of small fruits plums, peaches and apples.

The varieties of fruits of amateur value are very abundant. Even those produced in sufficient quantities to make them commercially important would make a long list. New varieties are constantly being introduced but very few satisfy the demands of commercial growers who are becoming more critical, and are slow to accept new, untried sorts. There is, however, an urgent demand for a large yellow-flesh peach of high quality to take the place of the old Early Crawford which has become discredited by reason of the general distribution of degenerate strains of that fine old sort.

ONTARIO—POMOLOGICAL DISTRICTS 1, 2.

By W. T. Macoun, Chairman, Ottawa, Ontario.

The Province of Ontario, of which I am to report the present status of the fruit industry, covers the immense territory of about 220,000 square miles. Over this great area there are widely varying climatic conditions, as the province extends from latitude 42° to above latitude 52°, or over 700 miles from South to North. Furthermore, the influence of such large bodies of water as the Great Lakes and the St. Lawrence river, apart from the natural differences in climate that ten degrees of latitude would make, give us an unusually varied climate in this province. In the Southwestern part of the province the peach is grown to perfection, and even as far north as latitude 44° near the Georgian Bay, where the effect of Lake Huron and the Georgian Bay is felt, good peaches may be grown. Beginning with the peach belt in the south and southwest of the province, we may gradually pass through districts adapted to the grape, plum, pear, cherry and apple, and finally to those northern regions where only the hardiest Russian apples, crab apples, wild Siberian crab (Pyrus Baccata), native plums, Sand cherry, Juneberry, and the native and cultivated small fruits are all that we may expect to grow.

There is a steady development of the fruit industry in the Province of Ontario and in those districts which a few years ago, were not considered particularly favorable for fruit growing, the development is perhaps greatest. One of these districts is that great area of land in the counties of Huron, Grey, Bruce and Simcoe, where as fine apples are produced as anywhere in the province, and where pears and plums, and in some localities peaches, succeed well. In no part of the province is more systematic work done in the culture, packing and shipping of fruit than in this great district. The peach trees which were destroyed in the Lake Erie district in the great freeze of 1899 have in a large measure been replaced and give promise of an abundant supply in the near future. In no districts in the province can the fruit interests be said to be declining. The causes which have contributed to the development of the fruit industry have been principally the improvement in cold storage facilities, better and safer transportation, and as a result the possibility of exporting fruit more profitably to the European markets. Very little is done in this province as yet in fruit culture under glass.

Marketing.—A decided improvement has taken place during the past two years in the method of packing, storing and marketing fruits. The first has been brought about principally by the passage of the "Fruit Marks Act" which has been well enforced and has done much towards changing the methods of packing. Cold storage houses are being erected every year and these play a very important part in the better storing and marketing of the fruit. During the past two years there has been a decided widening of the influence of the Ontario Fruit Growers' Association and several district associations have been formed which are affiliated with it. There has been a development also in the canning and evaporating business and firms are being established here and there through the oldest fruit districts.

Varieties.—New varieties are slow to replace the older and long tried kinds except in the colder parts of the province, where the newer and hardier varieties are being more largely grown. In apples, the Baldwin, Northern Spy, Rhode Island Greening, Fameuse and Ben Davis lead all others in the large apple growing districts, but less of the last named variety will probably be planted in future. The Stark and Ontario are two varieties which are growing in favor and are being more largely planted. For the colder parts of the province the McIntosh, Windsor Chief, Milwaukee, and North Western Greening are among the best of the newer kinds. There has been little change in the varieties of plums planted, few good European kinds having been introduced in recent years. A new variety called Emerald, referred to in the report of the chairman for 1901, is promising. It is of the Green Gage group, of good quality and very early, ripening during the first days of August. Of Japanese plums, the Red June, Abundance, Burbank, and Chabot are most in favor. The improved Americana and Nigra plums are being gradually but slowly introduced into the North, but it is difficult to get the settlers in the northern districts to understand the great improvement that has been made in them. Among the newer grapes, the Campbell's Early is regarded with favor by most of those who have tried it and where few varieties will ripen it is particularly desirable.

Among new small fruits, the best addition has probably been the Herbert raspberry, originated by Mr. R. B. Whyte, Ottawa, Ont. While this berry is of special value for home use, it will also probably prove of great value for local, and possibly for more distant, markets. Following is the origin and description of this fruit: About twelve years ago Mr. R. B. Whyte, of Ottawa, Ont., found about thirty chance seedlings in his garden and the Herbert was the best of these. The Herbert is a very vigorous, hardy and productive variety. The fruit is of the largest size, bright red, moderately firm, juicy and of good flavor and better for home use than the Cuthbert.

Orchard Management.—Closer attention is being paid to orchard management than formerly when there was less competition and fewer insect enemies and fungous diseases to fight. Spraying is becoming more general, orchards are cultivated more and the value of the cover crop is being more impressed on our fruit growers every year. The Hairy Vetch is a growing favorite for cover crop purposes, the cost of the seed appearing to be the only apparent drawback to the more general use of this plant. Seed is, however, now being produced in Ontario and the price should soon become more reasonable.

Insects and Diseases.—The San José scale, which has for several years done considerable injury in the Province of Ontario, is confined almost entirely to the Niagara Peninsula. Though at one time a serious menace to the fruit interests of that part of the province, it has not spread as rapidly as was at first expected and can now, also, by constant vigilance be kept under control by spraying. The fumigation of nursery stock has had much to do in preventing the spread of this insect. The apple scab fungus has not been as prevalent this year as last and although the crop of apples is not a large one the fruit will be much cleaner than usual.

NEW JERSEY—POMOLOGICAL DISTRICTS, NOS. 2, 3.

BY D. AUG. VANDERVEER, CHAIRMAN, FREEHOLD.

The fruit industry in this state for the year 1903, was badly damaged by extreme conditions of the weather. The loss to the fruit growers throughout the state will be very large. Many Bartlett pear orchards have been destroyed by leaf blight. The Kieffer pear has also suffered severely from the same cause, and the fruit is small and rusty. Peaches, plums, pears, and early strawberry crops ruined by late frosts at blooming time. Raspberries, blackberries, currants and gooseberries gave a full crop.

There has been no great change in any particular part of the state where fruit growing is developing, but there has been a gradual increase throughout the state in the fruit industry, many new orchards of apples, pears, peaches and plums having been set in the past two years, while a few old apple orchards have been taken out. Very little fruit is grown under glass. In the marketing and packing of fruit there is little change. Cold storage for apples and pears is largely increasing. Many large growers have their own plant on their farms, while others depend on the city storage houses. No increase the past two years in fruit growers' organizations. A large quantity of fruit is used for canning, jellies, marmalades, etc. Most of the apples not fit for market are made into cider, vinegar and whiskey. Grapes are largely grown for market and wine. The yield this year is 100 per cent.

A new blackberry to be introduced this year is worthy of special remark. It is named the Ward. It was found growing on the Michael Ward farm in Monmouth County, N. J. The stock has been purchased by David Baird of Baird, N J., and Charles Black of Hightstown, N. J. The Ward is a seedling of the Kittattinny. It is a strong grower, hardy in New Jersey and very prolific. The fruit is black throughout; quality best.

The orchard is receiving much more attention than formerly. Better methods in tilling, training, pruning, fertilizing, thinning and spraying, are required to make it a success. There is nothing particularly new concerning plant diseases or injurious insects. Most of the insects can be controlled by the proper spraying of the trees with the various insecticides of which paris green is the best and is mostly used. The San José scale has done great damage in portions of the

State, and there seems to be no certain remedy for it. Spraying with crude petroleum has been tried, while it has done some good, a great many trees have been killed by its use. In some sections, particularly in Burlington county, a mixture of lime, salt, and sulphur is used. It is said to be safe and successful. The leaf blight has been very prevalent the past year, mostly on the apple and pear. The remedy mostly used is bordeaux mixture. Spraying is not generally practiced by our fruit growers, but its use is increasing.

CONNECTICUT—POMOLOGICAL DISTRICT 2.

By N. S. Platt, Chairman, New Haven, Assisted by T. S. Gold, West Cornwall.

Strawberries continue to be grown in large quantities, particularly near New Haven, for shipment to Northern points. Good conditions for growing and ease of shipment, with quick transit, contribute to favor this industry.

Large plantings of peach have been continued in the southern, central and eastern parts of the State, stimulated by near markets and profitable production in the past.

Railroads have given quicker and surer transportation than before. Most of the peaches go to market in half bushel baskets. Most of the apples in barrels.

The Connecticut Pomological Society formed in 1891, gathers in and helps the interested fruit growers of the State. By publishing a list of peach growers, and later one of apple growers, in 1902 the Society aided both producer and buyer.

So far as I know canning (commercially) is carried on in only two or three places and evaporating not at all. In seasons of abundant crops there seems to be a field here open and ready for some one.

Thousands of bushels of peaches last year wasted for want of some such means of saving them. Either they could not be got to market, or the market would not take them and afford a profit. The same with apples and to a much larger extent. Our nearness to cities and manufacturing towns has in the past worked to prevent the founding of such industries, but with increased areas planted they will no doubt come in the future.

The San José scale has obliterated a few small orchards of peach and plum and entailed worry and expense on the owners of others. It has no doubt had an effect to discourage planting, but it may be only temporary. There are many and good reasons why Connecticut is a favored place for fruit growing. Climate is good, orchard lands are cheap, markets are near, railroads are frequent. The districts are few in which the railroad whistle cannot be heard. Europe is growing nearer all the time. Although difficulties abound the outlook is not dark.

The following report on apples for the home orchard is from the pen of the veteran pomologist, T. S. Gold:

By T. S. Gold, Cream Hill Farm, West Cornwall, Conn.

Even in this small state differences in climate and soil and culture materially affect the productiveness and quality of different varieties, also the seasons, so that there are exceptions to everything that I can say on the subject.

My first memory of anything was eating apples, and the first work I remember doing was picking them up 80 years ago. The Baldwin leads as a market apple grown on the hills, the strong apple soils of the state. Size, color, flavor, keeping quality, growth of tree and productiveness, give satisfaction to both grower and consumer, yet with the fifty best varieties to choose from for family and personal use we should not select the Baldwin.

The beauty and quality of the old Pearmain, Seek-no-further and Spitzenburg, that once enjoyed can never be forgotten, each one with its aroma and flavor so peculiar that you could select them in the dark, cannot be spared from our list of family apples. The Snow apple or Fameuse, with its tribe of seedlings, occupies the front rank as a home grown table apple. Prince's White Seek-no-further, but little known, has rare qualities for this purpose. When I add the Sweet Bough, some good winter sweet, some early tart apple for summer and a russet to keep till the new ones ripen, these meet our wants. So that curiosity alone would lead me to desire to add any one of the hundred varieties that cover our exhibition tables.

Now these favorite family apples will not bear neglect. The location of the tree must be right, just the proper amount of food and exposure, and then what family friend more enduring than the faithful old apple tree, that has sheltered and fed and warmed with its fallen branches perhaps six generations and still promises its bounty in the future. The old fables told truths under a moral. The old apple tree is a living truth that tells its own story.

I received a few days since by mail a seedling apple from Mr. Chas. A. Sill of Saybrook, that has qualities that commend it for further trial. Size below medium, shape nearly round, very even, skin thick, deep yellow covered with a net work of russet, flesh very firm, fine grained, crisp, flavor fine, sub-acid. Had been grown in that warmer part of the state and kept in an ordinary cellar, yet it was as fresh and hard as if just picked. It promises to be a choice long keeper of peculiar appearance and beauty.

RHODE ISLAND—POMOLOGICAL DISTRICT 2.

By Professor Fred W. Card, Kingston.

Fruit interests are not prominent in Rhode Island. Proximity to the coast seems unfavorable to the growth of most fruits, particularly plums and cherries. Pears are perhaps an exception to this rule, as are also peaches to a certain extent. Commercial apple growing is chiefly confined to the northwestern part of the State though a large young orchard has just been planted within 10 miles of the coast. Several promising peach orchards are found in different parts of the State, some being quite near to salt water.

Fruit interests are generally on the increase rather than the decline. Fruits under glass are confined chiefly to the establishments of wealthy men about Newport, or where conditions are similar. One large commercial grapery is located at Newport. A few peaches and nectarines are also grown in this establishment. In other cases, a surplus is marketed, or during the absence of the owner products may be sold. Grapes under glass appear to yield a fair return for the capital invested and labor involved.

Home markets consume all ordinary products and call heavily upon distant centers of production. Grapes and other fancy fruits grown under glass are largely marketed in New York and Boston. Cold storage is practiced little if at all. There is no organization of commercial fruit growers in the State. The Rhode Island Horticultural Society and the Newport Horticultural Society are both interested in fruits from the standpoint of the amateur.

There is practically no call for the manufacture of fruit products in this State. Tillage is the method most in vogue among progressive orchardists. A 75 acre apple-orchard recently planted has received careful attention in the selection of cions of known parentage.

Such diseases as the brown rot of stone-fruits, apple scab and others are particularly troublesome in the climate of Rhode Island. Peach yellows causes loss in many orchards. The San José scale is very common throughout the State. At least one large peach-orchard is infested with it, while bearing trees in many localities are being injured or destroyed. It is common in the private gardens and small places about the State.

A 25 per cent. mixture of crude petroleum, and the lime, sulphur and salt wash have each proved effective in fighting it. Summer treatment with kerosene emulsion, applied in the latter part of June, when the young scales have just hatched, has also proved effective in checking the spread in summer. No inspection laws are in force. The presence of the scale has doubtless discouraged planting in some cases but it has probably had little effect upon the general outlook.

PENNSYLVANIA POMOLOGICAL DISTRICTS 2, 3 AND 4.

PROFESSOR GEORGE C. BUTZ, CHAIRMAN, STATE COLLEGE, CENTER CO., ASSISTED BY A. I. LOOP, NORTHEAST, ERIE CO., R. L. WATTS, SCALP LEVEL, CAMBRIA CO., J. H. LEDY, MARION, FRANKLIN CO., H. W. NORTHUP, GLENBURN, LACKAWANNA CO.

The fruit interests of Pennsylvania are gradually gaining importance, not through one or two fruits only but through several large and small fruits which have shown that they are adapted to the soil and climate of this state. Apples are being extensively planted in several sections of the state but more particularly in Bedford, Fulton and Franklin counties. Peaches are prominent in what is known as the Juniata Peach belt in central Pennsylvania and the South Mountain belt in Franklin, Adams and Cumberland counties. Pears are yielding heavily in Montgomery and Chester counties. Grapes in Erie county where an immense acreage forms the western end of the famous Chautauqua Grape Belt on the south coast of Lake Erie. Small fruits are produced most heavily in proximity to the great manufacturing and mining cities like Pittsburg and Scranton. Erie City is one of the best markets for its size in the state and the fruit farms about it not only supply this market but ship great quantities of small fruits to Buffalo, Cleveland and Pittsburg.

The northeastern section of the state is most active in the growing of apples, many orchards are from 10 to 40 acres in extent in Susquehanna, Wayne and Lackawanna counties.

Canning factories have recently been established in fruit centers and create a market for a large portion of the production. The best fruit is contracted for at renumerative prices. A few years ago berries were sold in Erie county at very low prices and the industry lanquished, but now after the location of two large canning factories at Northeast, Pa., prices have so improved that hundreds of acres of new plantations have been put out. The largest percentage of increase is in red raspberries.

There are no fruit growers' associations in Pennsylvania to regulate the shipping of fruit to the markets, each grower acts independently in this matter and of course considerable loss is sustained by such a practice. The only organizations for handling fruit in this state are the grape shipping companies of Erie county.

The San José scale has played havoc with many of the younger orchards, especially of peaches. Fruit growers have been too slow to realize the danger and destructive power in this little insignificant insect. Orchards have gone to destruction, and nurseries have closed out their business because of the interference from the San José scale. The present practice is to spray orchards with kerosene, or lime and sulphur, and all susceptible nursery stock is fumigated with hydrocyanic acid gas.

The inspection of nurseries is regulated by the State Department of Agriculture and certificates are granted when no San José scale can be found, or where scale has been discovered a certificate is granted upon the receipt of an affidavit made by the nurseryman that he will properly fumigate all susceptible stock before it leaves his premises. This system is open to objection because unscrupulous dealers are careless in the manner of fumigating, or may even dispose of infested stock under certificate without fumigating.

OHIO—POMOLOGICAL DISTRICTS 2, 4.

PROFESSOR W. J. GREEN, CHAIRMAN, WOOSTER.

In General.—There has been no considerable development in fruit growing in Ohio during recent years. There is a somewhat increased interest in cherry culture and considerable planting of sour varieties has been done in various parts of the state, but more at Clyde than elsewhere. The soil in this section is mostly of a sandy nature and seems to be well suited to this fruit. Several hundred acres have been planted here within a few years and in no other part of the state is there any considerable increase. Sweet cherries do not flourish in any part of the state on account of the destructiveness of rot.

The Peach.—There are three distinct peach regions within the state; namely, along the southern shore of Lake Erie, mostly west of Sandusky in Ottawa county; in Muskingum county a little east of the center of the state, and in Athens county near the southern border. The northern district has the advantage of proximity to the lake. The fruit buds are seldom killed in winter in this region and late spring frosts do not often occur. Planting has for a number of years steadily increased in this region. Thus far no serious enemies to peach culture have given trouble except the San José scale and this is confined to a small portion of the territory. Inasmuch as the peach crop is almost sure in this region, the industry has thus far been quite profitable. The markets are close at hand and usually take the crop at good prices. A few instances have occurred where the prices have not been satisfactory on account of the quality of the crop. Thinning the fruit has not been generally practiced, and this is the greatest factor in causing the low quantity of the fruit. Peach leaf curl has also given considerable trouble as well as peach scab. On the whole, the industry in this region is in a flourishing condition and is extending quite rapidly both east and west along the lake shore and also on some of the islands.

The Central region, in Muskingum county, also the southern in Athens county, have fewer natural advantages. Their shipping facilities are not as good as those of the northern region, besides the crop is more often killed by cold weather in winter and late spring frosts. The industry has been largely developed in previous years but for several years it has been declining rapidly. In addition to the other drawbacks mentioned, the yellows has appeared in the orchards and destroyed great numbers of trees. The methods of cultivation in these regions have not been as good as in the northern region, hence the quality of the crop has been inferior. Thinning of the fruit has not been practiced to any extent. Owing to the hilly nature of the land cultivation is difficult and in some cases impossible. It appears now as though the industry would become almost extinguished in these regions within a few years. There are other regions in the state where peach growing is practiced to a considerable extent, but not so largely as in those named, and the belief is becoming quite general that peach growing outside of the northern belt is not a profitable industry within the state.

The Plum and Pear.—Plums are not grown in large quantities in any part of the state. Orchards exist here and there and some of them are of considerable size, but there are no districts where the industry has been developed to any considerable extent. The same is true of pear culture. The blight has been so destructive within recent years that many of the orchards that formerly gave good returns have been wiped out and but few young orchards have been planted.

The Apple.—There are no distinct apple growing districts within the state. The industry is quite general but most of the orchards are small. A few large commercial orchards exist and some are very profitable.

Grapes and small fruits.—Grape growing has been very extensively practiced along the southern shore of Lake Erie but owing to the prevalence of the rot and the low prices the business has declined rapidly within recent years. Many vineyards have been planted to peach trees and others have been destroyed and the ground devoted to farm crops. There is still, however, a very large acreage and a persistent effort is being made by many grape growers to retain their hold upon the market. Many are still carrying on the work successfully but the majority find it unprofitable. There are a few young vineyards being planted but it is quite likely that there will be a still greater decline within a few years.

In small fruit culture there have been some important changes. Formerly there were several sections where berries of different kinds were grown largely. In nearly all these the industry has declined but at the same time small fruit growing has become more general so that it is probable that many more berries are grown than formerly. The reason for this is that the shipping of small fruits to distant markets was found to be unprofitable, but in supplying small, local markets many growers have been very successful. Comparatively, little shipping is done now outside of the state but all the small markets are well supplied.

Packages.—There have been some changes in the packing of fruits which appear to be for the better. Formerly all small fruits were sold in half bushel drawers, four drawers making a case. This method has now been abandoned and all berries are sold in quart baskets. Nearly all go out in gift crates. Some of the local growers, however, use a better grade of crates which are returned to them. Quite recently the packing and sale of peaches in bushel baskets has become quite popular. More are probably sold in this way than in any other. Some fancy grades are sold in smaller baskets, but the half bushel basket, which was once so popular, has been almost abandoned. The cost of transportation works injuriously to fruit industries within the state. The local growers do not feel this but all who are compelled to ship find express charges to be a great tax. In a few cases it becomes possible to send less than carloads by freight, but as a rule but little fruit goes by freight except carloads, and facilities for shipment of this kind are not given by railroads except in sections where large quantites of fruit are produced.

Organizations and storage.—There are but few fruit growers' organizations within the state. A number, especially in the northern fruit region have been quite successful, but some other attempts made at organization have been unsatisfactory. Much more fruit goes into cold storage now than formerly. Comparatively few fruit growers have their own storage but depend upon the large storage houses in the cities. The fruit growers themselves, however, do not usually avail themselves of storage facilities, but after the fruit passes into the hands of the dealer considerable of it is stored. By far the greater portion of fruit of all kinds produced in the state is consumed in local markets without storage, but the storage problem is becoming one of considerable importance and both fruit growers and dealers are giving the matter attention.

There is but little effort made to utilize the crop of fruit not sold as fresh fruit. But very little canning or evaporating is done. Some apples are evaporated late in the season but probably not as many as in former years. Jellies, preserves, etc., are not manufactured to any great extent, largely because of the many imitation products which are on the market.

Orchard management.—There is a great diversity in orchard management. Nearly all of the best orchards of all kinds of fruit are carefully tilled. More tillage is done in peach orchards, however, than in orchards of any other kind of fruit, and it is mostly confined to the northern region. Apple orchards are pretty generally tilled while young, but after they come into bearing are mostly allowed to remain in grass. Cover-crops are not so extensively grown. Fertilizers are not used to any great extent. Wind breaks are seldom planted for the protection of orchards.

There is much interest at present in the grass-mulch method. A few orchards have, under this plan, proved very successful, and many growers are giving the method a trial. By far the greater majority of orchards, however, are not cultivated, but most of these produce inferior fruit. Many of the uncultivated orchards are pastured and the stock allowed to injure the trees and destroy the fruit. Mulching has been but little practiced except in connection with sod in orchards ; but few orchards have been cultivated and mulched. Some of our growers are awakening to the fact that one of the greatest enemies to orchard culture is drought, and these are divided as to their opinion whether tillage or mulch in connection with sod is the better method. Thus far the sod and mulch method seems to have more adherents than the tillage and cover crop methods.

Enemies.—The State has taken up the problem of dealing with plant diseases and injurious insects, and legislation has been enacted along these lines. Nurseries are inspected, and orchards as well, as far as it is possible to go with the appropriation made by the legislature. The law which was first enacted made it obligatory upon the State to spray orchards infested with San José scale, provided the owners would not do it, and to charge half of the cost to the owner, the State sustaining the other half. This law was not found to be satisfactory because many of the owners would wait for the State to do the spraying, hence comparatively little work was done because it was impossible for the State to cover so much territory. The law as it now stands makes it obligatory upon all owners to give treatment for San José scale and other dangerous insects and diseases and all of the cost is to be borne by the owner of the orchard. In case the owner refuses to spray the orchard may be declared a public nuisance and destroyed, but the State will not undertake to give any treatment. Formerly nurserymen were compelled to pay a fee for inspection, but inspection is now free, provided it is applied for before the first of July.

Orchards are inspected free until the appropriation becomes exhausted. Thus far the appropriation has been insufficient to carry on orchard inspection to any extent, and but few orchard trees have been inspected except in some of the larger fruit regions. The present law works satisfactorily except that the appropriation is too small for the purpose. The San José scale has given considerable trouble in some sections, but on the whole it has not affected the fruit growing industry at large to any great extent. Considerable injury has been done to trees in treating for this insect, especially with crude and refined petroleum. Peach trees have suffered more than any others. Apple trees have been treated successfully without injury. The sulphur and lime treatment has been satisfactory but has not been so generally used because of the difficulty in preparing the mixture. This pest is undoubtedly increasing, but it does not give very much alarm to professional orchardists. They do not seem to have much trouble in holding it in check. The planting of fruit trees seems to go on just the same as before the advent of this scale. A few are deterred from planting, but the majority of fruit growers seem to have but little fear regarding it. On the whole, the fruit industry is in a flourishing condition in the State. While we do not have as many large commercial orchards as some other sections the business is so widely distributed among so many small growers as to make the aggregate very large. There is a wide spread interest in all kinds of fruit growing, but it is confined mostly to those who are endeavoring to supply the local markets. Amateur fruit growing is not very largely practiced. It is a question if fruit growing for home use is keeping up to the former standard. There seems rather to be a decline in this branch of fruit growing. This is due somewhat to the discouraging results that are obtained unless spraying, cultivation and other necessary details are attended to. There seems to be an increasing willingness to depend upon the professional fruit grower for supplies. Farmers' orchards particularly are sadly neglected, and many of them are declining and decaying rapidly and comparatively few are being renewed. Commercial fruit growing, however, seems to increase, owing to the constantly increasing demands for fruit of all kinds. The fruit growers are learning how to successfully use the remedies against insects and diseases, and seem to be willing at all times to coöperate with the Experiment Station in controlling these pests. While Ohio does not rank high among states in the production of fruit in large quantities, yet it does stand high in the production of fruit for the local markets, and her fruit growers are among the most prosperous of the tillers of the soil.

INDIANA—POMOLOGICAL DISTRICTS 2 AND 4.

By C. M. Hobbs, Vice-President, Bridgeport.

In General.—The fruit conditions in Indiana are not the most encouraging. The climatic and soil conditions are quite as favorable for successful fruit growing as those of the same latitude in neighboring states. The chief difficulty seems to be that our people have not yet realized the necessity of changed methods in fruit growing to meet the changed conditions of a more variable and extreme climate, caused by deforestation and drainage, exhausted soil, and the increase of insect enemies and fungous diseases.

Here and there over the state, in different soils and situations, where fruit growing is made a business and up-to-date methods are practiced, fruit growing is a success, proving that our chief cause of failure is the want of the right man to manage the business.

Some sections of Indiana are as well adapted to apple growing as can be found anywhere in the United States. As yet there is little being done towards supplying our people with apples from our own orchards. We ship into the state annually more than a million dollars worth of apples, when we should be exporting two or three times this amount.

We have a few commercial apple growers in different parts of the state, who are demonstrating to us that there is a good profit in a commercial apple orchard properly managed. Our hope is that these examples of success will lead others in time to engage in the business, and that before many decades we shall be selling instead of buying apples.

Diseases.—The most serious menace to apple growing in some sections of the state is a fungous disease known as root-rot. This disease attacks the trees at any stage of growth. Some varieties seem to be more susceptible to its attacks than others, notably the Grimes' Golden. It is very discouraging to the grower to have his bearing trees dropping out here and there, leaving unoccupied and unproductive spots in the orchard. This disease seems to have received little scientific study, and we are still in the dark as to its cause and its remedy. We think this subject of sufficient importance to demand the attention of our experiment stations, so a careful study of the subject should be at once undertaken.

It seems that pear growing will never assume any commercial importance in our state until we have been able to prevent or control the blight. For some years past, Kieffers are more immune from blight than other commercial varieties. This year there is quite a bit of blight in this variety in different sections of the state, seemingly most severe in light soils.

Stone fruits.—With proper care as to selection of soil, situation and varieties for planting, cherries and plums are profitably grown. The Early Richmond and Montmorency can be successfully grown almost anywhere in the state, and are the most desirable varieties to plant. European and Japan plums usually rot badly if they escape our severe winters and late springs frosts. The Natives, Americana, Chickasaw and Hortulana types are our most reliable plums.

Peaches succeed fairly well on the high bluffs along the Ohio river and in the extreme northern part of the state near the lakes. In no part of the state can the crop be depended on every year. As a whole, peach growing in Indiana for commercial purposes is rather an uncertain proposition.

All the small fruits succeed reasonably well with us, if proper attention is given to location, selection of varieties, and cultivation. This year our fruit crop, generally speaking, is the lightest for many years, due chiefly to severe frost in May.

KENTUCKY—POMOLOGICAL DISTRICT 4.

PROFESSOR C. W. MATHEWS, CHAIRMAN, LEXINGTON.

There has been but little change in the status of the fruit growing industry in this state during the past two years. Never a very extensive interest as compared with general agriculture and stock-raising, several years of poor crops or low prices have discouraged many growers, who, without any special aptitude for the business, entered the field simply because a few enterprising men had been making large profits in the years preceding.

The discouragement of these growers, whose neglected and pest-ridden orchards tell all too plainly their unfitness for the business, is working for the ultimate betterment of the industry in the fruit regions of the state. During all the lean years of the past decade, a few men of industry and enterprise have been able, through the adoption of modern methods of producing and handling their crops, to secure fair average returns, and in some instances liberal profits.

There is needed in the fruit districts here, greater coöperation among the growers; more liberal shipping facilities upon the part of the transportation companies, and the organization upon carefully considered plans of subordinate enterprises for caring for the surplus fruit in seasons of abundance by canning, evaporating and other means.

With some further development of such additional advantages as those mentioned, the prospects for the future of this industry are still bright. Much of the land peculiarly suited to fruit growing is still very low in price, even in the fruit district surrounding Louisville, our largest city and best market in the state.

The Nursery Inspection Law of the State passed several years ago, has enabled the Entomologist and Botanist of the Experiment Station, who is charged with its execution, to render valuable service to the fruit growers of Kentucky. The State is comparatively free from several of the destructive pests that afflict the grower in other parts of the country.

The San José scale has been found in several counties, but with prompt treatment when found, it has not apparently as yet made very wide-spread invasions, and it is hoped that it may be held in check for a long time.

The State Inspector reports that the Strawberry Crown Borer and the Crown Gall of apple, peach, etc., are quite widely distributed through the State and in places are abundant.

Among the varieties of merit that appear from time to time, a new candidate, the Hickman apple, originated by Mr. D. W. Dickinson of Hickman, Ky., has recently received high encomium from the pomological experts.

It is described as of medium size, color greenish yellow with decided bronzy-red blush; flesh firm, yellowish, a little coarse-grained, but not annoyingly so; flavor mild, sub-acid and agreeable; a very late keeper and worthy of general trial in the Southern States.

Lexington, Ky., July 1, 1903.

DISTRICT OF COLUMBIA—POMOLOGICAL DISTRICT 3.

W. N. IRWIN, CHAIRMAN, WASHINGTON, D. C.

"All quiet on the Potomac," applies to fruit growing in the District of Columbia to-day quite as well as it did to the movements of the great armies here forty years ago.

Fruit interests, particularly those of tree fruits are on the decline. This is caused, first, by increase in value of land; second, by scarcity of laborers, and third, and the most important, by fear of San José scale, which has spread rapidly in the District. No fruits for market are raised under glass.

We have no canning factories. Jellies and marmalades are not made for the general market. Quantities of fruit juices are made for our home market.

The District is a promising field for expert small fruit growers. Choice berries command top prices and the supply is never equal to the demand. Our market is often crowded with poor fruit that yields little or no profit to the grower and is never satisfactory to the consumer.

If we could get out of the time worn ruts, where in depending on natural conditions we lose one crop out of three by drought, and would install some system of irrigation, crops would be more certain, the yield greatly increased, the appearance and quality of fruit improved, the purchaser satisfied, and best of all the grower receive a just reward for his labor. This improvement could be obtained at small outlay. City water can be had at twelve and a half cents per thousand gallons, meter measure, and syndicate lands can often be leased at nominal rents, with these advantages and an unlimited market right at hand, only experience and pluck are necessary to insure success.

In new fruits Mr. A. T. Goldsborough of Wesley Heights has produced several that deserve mention. His "Duplication" gooseberry is large, handsome and of good quality; plant vigorous and very productive.

His "Anak" and "Phil-crates" strawberries have good size, color and quality. Mr. G. has several other promising seedlings under test.

Washington, D. C., Aug. 19th, 1903.

WEST VIRGINIA—POMOLOGICAL DISTRICT 4.

GUY L. STEWART, CHAIRMAN, PARKERSBURG, ASSISTED BY FRED E. BROOKS, FRENCH CREEK.

In general there is great development in the fruit industry in the state. The eastern section easily leads in the number of trees now bearing as well as in the new ones being set. Their crop this year of apples is one of the largest they have ever had. This is true of apples in the southeastern part of the state in Greenbrier, Pocahontas and Monroe counties although the new plantings are not keeping pace with those in Berkeley and Jefferson counties. The northern pan-handle is already known as a fruit region but they are hardly keeping pace with the eastern part in the new settings. Their apple crop this year is only fair. Along the Ohio Valley there is but little general development although in isolated cases this is not true for some individuals are developing very rapidly and this same may be said for the Kanawha Valley. The above holds good for apples and peaches mainly, with pears beginning to assume importance. Grapes are but little grown and I know of but one case where they are grown for commercial purposes, that being along the Ohio River.

The central counties are beginning to appreciate that they are highly suited to the raising of apples and peaches and this is shown by the organization of a strong society, the Central W. Va. Horticultural Society, and by the decided increase in their acreage.

The causes for this general development are two, viz. :—the demand of the mining and oil regions and a general awakening to their advantages in the way of soil, climate and mountain altitudes giving high flavor and color.

Transportation offers no serious problems except refrigeration and the railroads are attending to this as rapidly as there is a substantial demand. Packing might be improved in many sections, although the eastern and northern parts are fully abreast of the times and are rapidly assuming a like position in regard to storage. In the northern pan-handle are some private storage houses of 20,000 bbls. capacity and there are several of 5,000 to 10,000 bbls. In the eastern part, companies have been organized and have erected storage houses convenient to the fruit sections.

Fruit growers' associations are slowly being organized. The most prominent in the state probably being the Berkeley County Horticultural Society. The Central West Virginia Horticultural Society formed about two years ago is also assuming a position of importance.

But little use is made of the cull portions of the crop except for the evaporator and the cider press. No jellies or marmalades are put on the market. In this connection it might be well to mention the use of the wild crab (*P. coronaria ?*) for jelly. In the mountains these grow in immense quantities and the people make a jelly for local markets that eclipses the jellies in general sale. In fact this and the mountain apple butter have a fair reputation among the travelers who have tasted them.

In apples—the main fruit crop—the Ben Davis, York Imperial, Grimes' Golden and Winesap are the leading ones with the Willow Twig, the leader in the northern part. The Aiken is being tried in the east by some of the prominent growers and so far is giving satisfaction.

The customary tillage is practiced in the more developed section but in the hilly country this either has never been used or it has been abandoned on account of the washing of the hillside. All of the older orchards except those in the more developed regions are in sod but I know of no place where the mulch is used in these. I feel sure that many of our orchardists would do well to study and use the Hitchings or Vergon plan of mulch. Except in the oft mentioned eastern and northern sections pruning and training are but little practised. This attitude is being changed by the teachings of the Experiment Station force at the various Institutes and in the general dissemination of knowledge.

San José Scale and bitter rot on some varieties of the apple are the most prominent pests of the year.

With the coöperation of the Experiment Station force and societies and a few individuals, the San José Scale has been systematically fought and I believe successfully as well. Petroleum has been the standard remedy although the lime-sulphur- and salt has been used. Certain sections were alarmed at the ravages of this pest but I believe they feel safe now. At least in no case has it tended to lessen the planting nor have I heard any complaints as to the check to growing trees.

In the northern section the bitter rot has proven a bad pest and seemingly with no satisfactory remedy. It has affected Bentley Sweet most severely.

In summing up I would say that never has the prospects for future development looked so bright as at present and this feeling is spreading over the entire state.

BY FRED E. BROOKS.

In nearly all parts of West Virginia, the interest in fruit is increasing.

The ease with which fruit may be grown in some of the central counties, together with the excellent local markets offered by a half dozen or more thriving young cities, is resulting in the planting of considerable areas of orchard.

The region is rich in timber, coal, oil and all natural resources which are being rapidly developed, thus creating a constantly growing market. The range of 1,000 to 2,500 feet in elevation and the great diversity of soil conditions to be found within the limits of Barbour, Lewis, Upshur and Randolph counties, make it possible to grow with considerable success all the varieties of fruit common to temperate America. In this home of the Lucretia dewberry, berries of all kinds grow wild and in the more elevated sections many a mountain dweller's table is supplied throughout the summer with fresh wild fruit gathered from the fields and forests. Beginning with the strawberry he has an unbroken succession including raspberries, dewberries, blackberries, huckleberries, sweet cherries, grapes, plums and cranberries, which latter grow in profusion in the glade lands. Given careful culture these fruits reach a high state of perfection and yield heavy crops.

Small orchards of pears and plums are seen, but apples and peaches are grown more extensively and these fruits have a flavor, color and firmness seldom found in other sections.

The Central West Virginia Horticultural Society was organized a year ago and is doing much to disseminate information as to the practical methods of fruit raising in this hilly section. No uniform package is used and as yet but little has been done to provide storage for large quantities of fruit.

York Imperial, Rome Beauty, Grimes' Golden and Ben Davis are the favorite apples. Fallawater does not make a good tree but the fruit takes on a color to rival the Mountain Rose Peach. There is a good demand for summer and fall apples and varieties of this kind are being overlooked by the larger planters.

Many orchards are in sod but the more progressive orchardists are cultivating and some are adopting methods of mulching which are adapted to steep lands.

The San José scale has appeared in a few localities, but prompt measures have been taken to suppress it. Lime-sulphur and salt of a 12-12-50 strength has been used against it with marked success. The occurrence of scale here has not affected to any extent the planting of orchard trees. This season peach yellows is not so common as in former years, but pear blight is doing a great deal of damage. No special invasion of pests has occurred and well cared for orchards are in a vigorous condition, though they are not bearing full crops on account of the late spring freezes.

MARYLAND FRUIT REPORT—DISTRICT 4.

C. F. Austin, Chairman, College Park, Maryland.

The soil and climatic conditions of Maryland make it possible to successfully grow almost every fruit and vegetable that is known to the temperate zone. The state reaching as it does from the tidewaters on the east to the Allegany mountains on the west, gives more of the varied conditions than is found in any other state in the eastern part of this country.

Maryland naturally divides itself up into four districts in the discussion of the fruit growing interests. First the eastern shore, comprising those counties lying to the east of Chesapeake Bay ; second, Southern Maryland consisting of those counties lying to the west of Chesapeake Bay, between the bay and the lower part of the Potomac river ; third, Northern Maryland, comprising the counties bordering on the Pennsylvania line as far as Frederick County ; fourth, Western Maryland, consisting of Frederick, Washington, Allegany and Garrett counties.

In this report we wish to make up some of the leading fruits and tell in which district they are successfully grown.

Apples.—The growing of winter apples is confined to northern and western Maryland and almost entirely to the latter. While this industry has not taken the lead as the sister state of West Virginia, still there is a great interest taken in the matter. Mr. E. P. Cohill, a resident of Hancock, Washington County, who has been an extensive buyer of apples for the past twenty-five years, tells me that apples of exceedingly fine color and keeping qualities are produced all through this district. There is at present a great awakening in apple planting all through this district, and hundreds of acres of young orchards are being planted. One of the largest orchards is being planted by the Tonoloway Orchard Co., of Hancock, Md. This orchard consists of four hundred acres.

The soils of this section best adapted for apple culture are the lime stone and the red shale lands. Both kinds are very abundant, but the red shale land is in excess of the other. Good results are also being had upon the clay and loamy soils of this district.

There is a great deal of interest being taken in summer apples upon the Eastern shore and southern Maryland, and a good many trees are being planted. The soil of this section runs from a light sand to a loam and clay.

The leading variety of winter apples planted are York Imperial, Grimes Golden, Ben Davis, Stayman's Winesap, with some Stark, Pewakee, Fallawater, etc. The summer varieties are Yellow Transparent, Fourth of July, Jeffries, Red Astrachan, Williams Red, etc.

The peach industry is not waning in the State, for there has been an increased planting in nearly every fruit section of the State during the past two years. While the questions of orchard improvement by better cultivation, thinning, pruning, spraying, etc., are receiving a great deal of attention by many growers, the matter has not been taken a hold of as it should be by the orchardists of this

State. The old methods of orcharding are too common in this State to give Maryland fruit the name it should have upon the markets of the world. The orchards consist largely of the following varieties: Sneed, Amsden's June, Triumph, Mt. Rose, Early and Late Crawford, Old mixon, Stump, Champion, Smock, Salway, Elberta, Garies Holdon and Bilyeu Late. This season has been almost a total failure in the crop, there being a few scattered peaches in the different sections. There is probably more fruit in the mountain sections of Washington and Frederick Counties than any other section of the State.

Pears are not being planted to any extent, except the Kieffer which is still being planted quite extensively upon the Eastern shore, and especially in the mountain fruit districts of Western Maryland.

Small Fruit.—The number of acres devoted to the small fruit industry of this State is exceedingly large, especially the growing of strawberries which is the most extensive of all the small fruits. On account of the late frosts and severe drought during the early part of the season, the early varieties were a very short crop this season. The leading strawberry districts are the Eastern shore and southern Maryland. Upon the Eastern shore the leading strawberry sections are in the vicinity of Crisfield, Salisbury, Cambridge and Ridgely. In southern Maryland, Anne Arundel county is still the leading section. The southern parts of Harford, Baltimore and Montgomery counties also grow large quantities of fruit. The leading varieties grown upon the Eastern shore are Excelsior, Johnson's Early, Marie, Tennessee Prolific, Pride of Cumberland and Gandy. In southern Maryland we find about the same list with the exception of Anne Arundel county where the Tubbs is grown to almost the exclusion of all varieties except Excelsior for early, Gandy and Crimson Cussion for late. The Tubbs gives remarkable success in this county and is almost a total failure in every other section.

Red raspberries are not grown to any extent in this state. Black raspberries are quite extensively grown upon the Eastern shore and southern Maryland, but it is the mountain fruit districts of Washington county in the vicinity of Keedysville, Boonsboro, and Mapleville, etc., that we find the leading sections for the fruit. The Kansas is now planted to almost the exclusion of all other varieties. The Gregg was the leading variety until the Kansas was introduced. The growth of the vines, size and quality of the fruit is something remarkable when we take into consideration the fact that it is grown upon the hilly mountain soil. But everything seems to be adapted to producing the finest of fruit and it meets with a ready sale upon the city markets. Currants and gooseberries while grown to some extent do not become a commercial crop.

Vegetables.—In trucking interests Maryland stands at the head and the industry is constantly increasing especially in the growing of such crops as the canneries use, as tomatoes, sugar corn, peas, etc. Few people who are not familiar with this industry are aware of the amount of the crops that are annually produced in this state. Maryland cans one ninth of the entire tomato pack, and other things in proportion. The increased price in canned tomatoes has made the growing of this crop a very valuable one for the past few years.

Cantaloupes have been very successfully grown upon the Eastern shore and southern Maryland for a long time. But probably one of the most surprising things with reference to this crop has been the rapid development of this industry in the mountain fruit districts of western Maryland. It has been only within the last four or five years that they have been commercially grown and now hundreds of acres are annually planted. On account of the cold and wet season the crop has been very short and inferior both in size and quality.

GEORGIA—POMOLOGICAL DISTRICTS 4, 5.

G. H MILLER, CHAIRMAN, ROME, FLOYD CO., ASSISTED BY WILMON NEWELL, ATLANTA, FULTON CO.

Fruit Industry.—The fruit industry, and especially the peach industry, is being wonderfully developed in this state. Peaches succeed in quite large areas in different parts of the state. The most rapid development now, perhaps, is in North Georgia, but there is no section in which the fruit interest is declining, unless it be in a very few quite limited areas where, owing to the ravages of the San José scale and the prevalence of the Brown Rot a few growers have become discouraged.

There is now, according to the best authorities, about sixteen million peach trees planted in orchards in the State of Georgia, and quite a number will be planted the coming fall and winter. The apple industry is also being developed, especially in the northern sections of the state. About two and a quarter million apple trees are reported as having been planted in this state. Of this number about two millions are in the northern section. There are over three hundred thousand pear trees planted in the state; more than one-half of these are in the southern section. Plums are also being planted but we have no estimate of the number of trees. There are about twelve thousand acres of vineyards in the state and over three thousand acres of berries. Very little attention is paid to fruit under glass.

Marketing.—The transportation problem is the most serious one which confronts the fruit grower in this state. With the immense number of trees that are now planted, and being planted, in a few years the grower cannot expect to realize the prices which have prevailed for the last few years, and in order to make his fruit-growing profitable, he must have lower freights to market. Efforts are now being made by the fruit growers of the state to secure this much desired end, by a reduction of the minimum weight required in the transportation of peaches, and lower freight rates as well.

The packing is mostly done in six-basket carriers. The growers have very much improved in their style of packing, in the last few years. Cold storage is not much practiced in our state. Some fruits are sent to cold storage in distant markets and usually with good results.

Of fruit growers' organizations, we have the Georgia Horticultural Society, The North Georgia Fruit Growers' Association, and the Georgia Peach Growers' Association; they are the leading associations in our state.

Manufacturing.—There has not been very much done as yet toward utilizing that portion of the crop which cannot be sold as fresh fruit. Fruit growers having in view the immense peach crops that they will have to handle in a few years are investigating the different means of canning and evaporating, etc., that they may utilize in that way the surplus fruit.

Varieties.—Of peach, the leading variety is Elberta, in some sections of the state seventy-five per cent. of all the planting being of that variety. Other popular varieties are the Carmen, Waddell, Mt. Rose, Chinese Free, and to a small extent quite a number of other varieties. The apples that have been planted in commercial orchards so far have been usually of the early varieties, as Red June, Red Astrachan, Maiden's Blush, Horse, etc. Planters are now turning their attention to growing varieties that can be marketed for the holiday trade, in the South. Of these we might name Black Twig, Ben Davis, Gano, Kinnaird's, Mo. Pippin, Rome Beauty, Terry, Winesap, Yates and York Imperial. Of pears the Kieffer and Le Conte are most largely planted. Of plums the Japan varieties and of these the Abundance, Burbank and Red June take the lead. Of cherries, the Morello class are mostly planted. They, however, only succeed well on elevated land and in the northern part of the state.

Orchard Management.—The commercial orchards as a rule receive good cultivation, being usually plowed early in the spring, then cultivated with a harrow or cultivator of some kind until about the middle of August. Owing to the increasing cost of labor, the orchardists have introduced labor saving implements into the cultivation of their orchards as much as possible. Cover-crops are being sown in some orchards, especially on the hilly lands with a view to prevent the washing away of soil during the winter months. Trees are trained with low branches and peach trees especially are kept shortened so that the fruit can be gathered from the ground without the aid of ladders.

For fertilizing, in young orchards the fertilizers rich in nitrogen are used. After trees come into bearing, fertilizers with a large percentage of potash is preferred. There is no other frost protection used than to plant the orchard where they will be partly, at least, exempt from the effects of the late spring frosts.

Propagation.—Care is taken in the selection of stock, seed, buds, cuttings, or scions, to get them from healthy trees and from section of the country where such diseases as the Yellows, etc., do not prevail. The usual methods of propagation are used. Planters do not have the dread of the San José scale they had a few years ago, as they find they can keep it under control, if they cannot entirely exterminate it. In sections where the leaf curl prevails, spraying during the spring or winter, any time from the first of January until the buds begin to open, with the Bordeaux mixture, has been found an effectual preventive.

The planting of trees of all kinds for home use is becoming much more popular among farmers and the suburban residents of our state.

The following notes upon legislation, inspection and San José scale are furnished by Mr. Wilmon Newell:

Legislation.—The Georgia law provides for an annual inspection of nurseries together with hydrocyanic acid gas fumigation of all nursery stock shipped or placed on the market within the State. Nurserymen from outside the State, shipping to points in Georgia are required to attach tags issued by the Georgia state board of Entomology. These latter are issued upon the filing of proper inspection certificate showing that the stock has been inspected by a competent government or state official. Nursery stock shipped into Georgia must also be fumigated. The law also provides for the examination and treatment of orchards. The execution of the law is placed in the hands of the State Entomologist, under the direction of the state board of entomology, which latter board is composed of the Commissioner of Agriculture, the President of the Georgia State Horticultural Society, and the President of the State Agricultural Society. Experiments and investigations with insect pests and plant diseases are conducted by the State Entomologist, and the results published from time to time in the form of bulletins.

San José Scale.—The advent of San José Scale has had practically no effect in discouraging the planting of orchards, as it has been demonstrated that this pest can be successfully controlled by winter spraying. In many sections the orchard acreage has doubled within the past two years, and in sections where the San José Scale has been prevalent for five or six years, the orchards are kept in good condition and young orchards are being continually planted. The amount of nursery stock grown within the state, as well as the number of nurseries has materially increased within the past two years. The San José Scale has had no perceptible effect upon the commercial value of the fruit produced.

The San José Scale is successfully controlled by winter spraying with kerosene and water, or crude oil and water mixtures of from 15 to 20 per cent. Both kerosene and crude petroleum are applied in the form of emulsions also. Within the last year many orchardists have adopted the lime, sulphur and salt treatment and it has been found to be more effective than the oil treatment. This wash has been adopted largely through the results of extensive experiments conducted by Prof. W. M. Scott, State Entomologist.

NORTH CAROLINA—POMOLOGICAL DISTRICTS 4, 5.

T. K. BRUNER, CHAIRMAN, RALEIGH.

The Pomological interests of North Carolina are great, and cover a very considerable area of the state, reaching to the higher mountain plateaus of the west and descending far into the eastern plains. These extremes grow different fruits, and those attaining perfection in one cannot always be commercially grown in the other. This wide range naturally divides the subject and makes it pertinent to treat them separately.

The Eastern Fruit Region.—Twenty years ago the sub-heading above would have been a misnomer. The region was given over to agriculture and cotton, corn, tobacco and sweet potatoes were the ruling crops. The development of the trucking interest of this vast region has taken place practically within these two decades.

Strawberries.—This fruit, as a commercial product, was first grown on the Atlantic Coast Line Railway, by Mr. J. S. Westbrook, some eighteen years ago. He told the writer that his first shipment brought him $1.50 a quart. That first crop, small and insignificant, with its high return in money, was the beginning of an industry which has grown into proportions best expressed by the shipments made along the lines of this same railway during this year of 1903. There were more than two thousand refrigerator carloads of strawberries, and over sixty thousand crates shipped by express from the lands adjacent to the Atlantic Coast Line during the season this year. Remember this is only on one line of railway traversing this region.

To give some idea of the value per acre to the grower, it may be well to say that the crop for the current season has been the most profitable for years, some growers reporting net returns of as much as $300 to the acre. This is unusual, however, as the average returns may be said to approximate $90 an acre, some falling slightly below at times, and some running above. There are numbers of growers who make returns of from $100 to $120 an acre annually, but others, less careful, bring the general average down to the figures quoted.

On the Seaboard Air Line Railway a movement has just been inaugurated to further this culture of the strawberry and other small fruits. They are meeting with most encouraging success, so that this line will soon add very materially to the area devoted to fruit growing in the eastern part of the state. Special attention has been given the strawberry this year, which is the first season since this work was undertaken. Notwithstanding a dry spring, some cold days when the fruit was setting, and hail when it was ripening, these experimental growers realized as high as $215 per acre, while the lowest and most heavily damaged realized nearly $100 per acre. The results are, for the first year, more than encouraging, since the shipments aggregated several carloads from the territory between Wilmington and Hamlet. Large areas will be added the coming and succeeding seasons, in this new territory.

Before leaving this subject let me interject a short note on the method of cultivation adopted by Dr. O. W. Blacknall, of the Continental Plant Company, Kittrell, N. C., who says:

"As you know, Kittrell is the great strawberry plant place. The Continental Plant Company here has 200 acres in strawberry plants. They raise about 30,000,000 strawberry plants. These plants are shipped to every state in the Union, some to England, France, the West Indies, Mexico, Canada, Australia, etc. This Company also ships about 150,000 quarts of strawberries annually.

"Land is prepared for strawberries by growing and turning under cowpea vines. The rows are then run off three feet apart and from 500 to 800 lbs. of cotton seed meal is sown in the furrows. This furrow is then listed by a furrow on each side making a low bed. On this the plants are set two feet apart. Plants intended for propagation have all blooms pulled off and are not allowed to bear. This throws all the vigor and strength of the plant into the runners. The plants are cultivated by means of a small tooth cultivator and hand hoe. Cotton seed meal is freely used, as experience has shown that nothing surpasses it in making good plants. The fields are kept perfectly clean. Those intended to bear are mulched in March or April liberally with pine straw (needles). Previous to this mulching a top dressing is used of the following formula:

"Per acre:	Nitrate of soda..........................	100 lbs.
	Sulphate of potash.......................	100 lbs.
	Acid phosphate......	500 lbs."

I was unable to secure reports from the region traversed by the N. C. and Atlantic Railway from Goldsboro to Beaufort, in regard to strawberries or other fruits.

Dewberries, Blackberries, and Huckleberries.—These also thrive and are profitable in a large area of the east both on the Atlantic Coast Line and the Seaboard Air Line Railways.

The dewberries and blackberries are of the cultivated sorts, which are generally trained to posts or to wire fastened on posts, and are nearly as profitable as strawberries, but are less exacting in cultivation and care, and bear shipment better. They thrive on slightly thinner land than the strawberry and are more easily picked. They yield a return of from $50 to $100 per acre.

Mr. J. W. White, of the Seaboard Air Line, says: "The presence of blackberries and dewberries growing wild suggested experiments. The results have been entirely satisfactory. They are very prolific, and under cultivation reach an unusual size. At the vineyard of the Niagara Fruit and Grape Company I have seen dewberries two and one-half inches long and well proportioned. The culture has extended to Moncure, and has for several years been extensively engaged in at Ridgeway and vicinity, until refrigerator cars are required for their movement."

The territory surrounding Fayetteville, in Cumberland County, is also well adapted to this industry, and one thirty acre dewberry farm there has produced $3,000 worth of fruit in a single season.

Of the whortleberry or huckleberry, some thousands of dollars worth are shipped annually from two counties—Duplin and Sampson—in North Carolina. They grow wild and in great profusion in the so-called swamps of those counties. No care whatever is given the plants, nature does it all. The value of the crop is reported to reach an aggregate of $200,000 some seasons, but as I have no means of verifying that statement, it may not go as such, yet the returns are known to be large.

Peaches and Pears.—This region, or rather the region just west of the great berry field just described, is also the home of the peach and the pear.

Here is appended the experience of Mr. J. Van Lindley, of Pomona, Guilford County, but who has gone down into the sand hills of Moore County to lead the way:

" You asked me to give you my experience in peach growing in the sand hill region of Southern Pines, in Moore County, North Carolina, where the long-leaf pine once flourished, but which have had to succumb to the cruel lumberman's axe, leaving that section almost a desolate waste, once most beautiful forest. The sand is from 20 to 75 feet deep.

" Peaches, plums and oriental pears flourish there. Peaches and Japan plums bear almost every year. In twelve years' experience we have had only two failures. In 1894 a freeze in March killed all fruit and even injured oak trees all over the section. Then again in 1899 a warm spell in the early part of February started the sap slightly, then on the 14th of February the thermometer registered below zero, which killed all fruit in the bud in the south and even killed some Japan plum trees. There is only occasional phenomenon of this kind to interfere to any extent with regular crops of fruit. These are the two years of failure in the twelve years' experience I have had there, but as noted they seldom interfere.

" The soil produces peas and potatoes in abundance. Peas and crabgrass make splendid hay, all we need for feeding stock, and the peas are valuable in secreting the nitrogen from the atmosphere, thus replenishing the soil.

" *Varieties of Peaches.*—When the Sneed and Triumph came up I planted them largely, but with me they failed as reliable market peaches, so I have discarded both these varieties in my orchard. I find that all varieties which ripen in May, June and July do well in that section, including Elberta. After twelve years' experience I am now growing the following varieties for market purposes: Greensboro, Waddell, Hiley, Camelia, Connet's Early, Carman, Gov. Briggs, Lady Ingold, Belle of Georgia and Elberta. Later peaches seem to fail on that high sandy soil. As Camelia, Carman and Connet's all ripen practically at the same time, I will plant no more of Connet's, as it does not bring the price of the two first named. We have another variety called Mayflower, which ripens some five days before Sneed, that I am experimenting with, and I believe it is going to be a good market peach for that section. I expect to prove it fully next year.

" Of plums, the Red June is the best of the lot so far, and pays well.

"The Kieffer pear, 5,000 in number, now ten years old, have never borne but a scanty crop. Many of the leading pomologists of the United States say that they won't bear in large blocks unless they are fertilized by other varieties. I had about concluded that they were right, as the largest crop we have got up to 1902 was 300 bushels. So I concluded to top-work a portion of them last winter, but failed to get it done. This year (1903) the entire lot of 5,000 trees are as full as they can hang,—the trees breaking down with fruit. So this theory is exploded, or is for this year at least, in this orchard.

" We have to give the orchard thorough cultivation, spraying, pruning and an annual application of fertilizer 300 to 600 lbs. per acre. I use fertilizer which analyzes 8 per cent. phosphoric acid, 4 per cent. nitrogen, from fish scrap, and 7 per cent. potash, which makes a high grade fertilizer.

" Carrying out these points as noted in varieties, cultivation, spraying and fertilizing, and with proper pruning and thinning of the fruit, I know of no place that can beat it, as we rarely fail having a crop every year.

" Dewberries, blackberries and Delaware grapes do as well there as in any section, and pay well."

Mr. J. W. White, already quoted in regard to berries, has this further word on this subject.

"The fruit growing industry in North Carolina throughout the territory traversed by the Seaboard Air Line Railway had its origin at Southern Pines.

"After the forests had been denuded in that vicinity, it was supposed that the lands had little or no commercial value, and the region was only esteemed as a health resort for those affected by pulmonary diseases. New Englanders were the first to realize the possibilities, and many who came for a brief sojourn made it their permanent abiding place.

"Niagara and Delaware grapes were first introduced; but the Niagara was not a success in comparison with the Delaware,and by degree the former was displaced. Now grape growing in that sandy region has reached a solid basis by the careful growers. Grapes were immediately followed by peaches and later our friend, VanLindley, converted a large area of waste into peach and pear orchards, which, in perfection, it would be difficult to surpass.

"Inasmuch as the Georgia growers use red clay land, the experiments in the sandy country were watched with interest. There are points in favor of both kinds of land, likewise about equal disadvantages. The clay will bring the trees into bearing a trifle sooner than the sand land, but in the same manner it produces a heavier foliage, requiring more pruning and preventing as many trees being placed to the acre. Sand land requires heavier fertilization; but as the yield per tree, after a certain state of advancement, is about the same, and considering the greater number per acre, we find an equalization with the more Southern climes, and an advantage in nearness to market, insuring lower freight rates and perfect condition of fruit on arrival thereto.

"The more southern grower considers $1 per crate on track a fair price, and there is a profit at this even with the freight deducted. The Carolina grower when receiving the market price, which this season was from $1.50 to $2.25 per crate, will net from $1 to $1 50 per tree, or from $150 to $200 per acre.

"It is a well-known fact that watermelons can be grown in abundance—the yield is one-half car per acre. The Seaboard Air Line moved five hundred carloads from the territory between Old Hundred and Maxton (thirteen miles) last year; but not until recent years was the discovery made that cantaloupes would thrive also. The famous "Rocky Ford" was not allowed to remain peculiar to Colorado; but its visit to North Carolina meant its permanent abiding place to the benefit of the few who had faith in their earning power. In the vicinity of Maxton the smallest kind of acreage has produced in a few months an amount that would be considered a handsome salary for a year. Like every line that proves its ability to earn a revenue, this industry has had a steady following added, and I predict for North Carolina its rise to a position that will reckon it as a factor in the supply of this commodity to the consumer."

Still further east, indeed within four miles of the Atlantic, Mr. George N. Ives has done well with peaches, pears and berries. This is only alluded to to show extent of area adapted to these fruits, which really means that the entire coastal plain for two hundred miles inland is suited to the growth of small fruits, peaches, pears and plums, to say nothing of the whole vegetable kingdom.

The Piedmont region must be passed over because there is no commercial outlook to the fruit-grower there at present, and as it is of that phase of the subject that this paper treats, further mention will be omitted.

The Mountain Region.—This has been aptly described as the "home of the apple." Its fertile, loamy soil, its cool climate, its abundant rainfall, all tend to make good the trite saying. For generations they have flourished there, both in improved nursery stock and native unknown seedlings, attaining a size, color and flavor, without any care, seldom attained elsewhere. For an hundred years they have grown most luxuriantly in such quantity as to supply local family consumption, for distilling into brandy and to encourage an occasional trip in the "schooner" variety of the farm wagon to supply the denizens of the eastern plains with holiday fruit. This was prior to the railroad's penetration of the region. Since, the aspect has changed very gradually. It is really only within the last ten years that the planting of trees has been begun on the scale of the market orchard. But such pioneers as Nat Atkinson of Asheville and George E. Boggs of Waynesville, now at rest, and J. A. May at Canton, long before called attention to the region as the place, par excellence, for the production of the highest types of this most useful of fruits. Later, Moses H. Cone of Blowing Rock, J. E. Hall, John Farrier and others of Waynesville, Haywood County, have set the pace in putting out commercial orchards.

To show something of the movement, during the last decade, of putting in trees on a scale which promises in its future development to bring the region into that commercial prominence it so richly deserves, it may be stated on the authority of the last census, that within that time more than 2,175,000 apple trees have been planted. In other words, the total number of apple trees in the state has been increased from four to more than six millions. The good work has really just begun, and from the conditions as they now exist, I am warranted in saying that during the next decade the number of trees will reach the ten million mark.

The stimuli which have recently given publicity to the region and have been the means of inviting investment therein, may be traced to the work of the United States Department of Agriculture, Division of Pomology, and the North Carolina Department of Agriculture. In 1899 the former collected for exhibition in Paris, France, Exposition of 1900, some thirty varieties of apples. These were taken late in the season and were really selected from the cellars and apple houses of the growers and were, as a rule, too ripe for the long journey and cold storage treatment. Yet it is gratifying to note that awards were accorded this fruit, as follows: Ben Davis, two; Camack, two; Stine, two; Limbertwig, two; Buff, Gilpin, Winesap, Yellow Newtown (Albemarle) and York Imperial, one each. Could the work have been done a month earlier, this list would have been much larger.

It was about this time that the State board of Agriculture began its work of exploitation and publication. It issued a bulletin devoted to the apple and distributed 25,000 copies, both in and out of the State.

At the Charleston, S. C., Exposition (1901) the Board of Agriculture made an exhibit of thirty-six varieties, keeping the tables replenished from cold storage. This was a very attractive part of the exhibit, and received flattering attention from visitors.

The year following, it assisted in making an excellent display of apples at the North Carolina State Fair, where no less than seventy-five known varieties and some fifty seedlings were shown. The wide range of varieties, the size, color and flavor of the fruit made it a remarkable show. At the risk of being a trifle tiresome, I append a list of forty of the varieties shown, and also the circumference in inches around the widest part of the apple:

	Circumference.		Circumference.
Arkansas (Mammoth Black Twig)	12	Limbertwig	9½
Albemarle (Yellow Newtown)	11	Loy	11¾
Baldwin	10½	McAfee	10½
Ben Davis	10	Missouri Pippin	9½
Bonum	8¾	Mother	10½
Buff	12½	Nickajack (Stine)	11¼

Buckingham	10½
Buncombe	9
Bullock (Am. Golden Russet)	8½
Camack	11
Carolina Beauty	12
Dula Beauty	12¼
Esopus Spitzenburg	10
Fallawater	12¼
Gloria Mundi	13¼
Grimes Golden	9¼
Gilliflower	10x11
Hoover	13
Jonathan	9
Lawver	11½
Northern Spy	12
Rall's Genet (Neverfail)	10
Romanite (South)	8½
Rome Beauty	12¾
Royal Limbertwig	10½
Shockley	9
Smith Cider	10½
Smokehouse	11
Stayman Winesap	11½
Virginia Beauty	10
Winesap	11
Wolf River	15¼
Yellow Belleflower	10¼
York Imperial	11

This list will explain itself to the apple grower. He will find some of his favorites included, and the measurements will give him a proper conception of the size. The color and flavor cannot be reproduced here, but I can safely say that they were perfect for the variety.

I have given this much of my report to the regions where fruit growing is developing. There is no report to make of regions where it is declining in North Carolina.

Much could be said on the question of transportation, but this report will have to close by omitting all the other topics suggested by the Chairman of the General Fruit Committee, except that relating to insect pests, which is supplied by Mr. Franklin Sherman, the efficient State Entomologist.

"North Carolina has her full quota of insects which attack fruit-producing trees, and they are sufficiently virulent so that our best growers are now fully awakening to the importance of treating their trees for them.

"Among the worst of our pests may be mentioned the following: Apple pests: Round-headed Borer, Flat-headed Borer, Tent-caterpillar, Woolly Aphis, Oyster-shell Scale, San José Scale, and Codling Moth. Pear pests: Round-headed Borer, San José Scale and Codling Moth. Plum pests: Peach Borer, San José Scale, Plum Curculio. Peach pests: Same as for Plum.

"There are many others, but it is safe to say that seventy-five per cent. of the total insect loss to our fruit trees is caused by the species indicated.

"It has for some time been recognized that for the best protection against most of these insects it is necessary to use spraying machines, and we have therefore laid special emphasis upon the necessity of this operation on every fruit farm. It has been gratifying to note that our largest and best growers are rapidly adopting this practice with most gratifying results, and it is safe to predict that after a few more years the grower who does not spray his trees will stand but a poor chance of success when he comes to place his fruit in the markets to compete with the fruit of those who do spray. As an evidence of this it may be mentioned that at the last State Fair there was the largest and most beautiful display of apples ever yet exhibited in the state and the one grower who took the greatest number of prizes is an ardent follower of the practice and, it need hardly be said, that since he has seen his fruit so successful in competition with unsprayed, he is a still more ardent advocate of spraying.

"The San José Scale has done a great deal of damage in this state, as elsewhere, and we may here mention that in North Carolina it is not confined to any one section, nor is it debarred from any particular localities. The kind of soil, climate, or elevation above sea-level does not seem to have any effect upon it, for our maps show that it is distributed from the seashore to the highest mountain elevations, doing damage in all localities. It may be said, however, that in the western localities the apple is the principal fruit grown and as this is more hardy than the other fruits, it is not so easily hurt by the Scale. Further, in this higher elevation, the Scale does not have so many annual generations, and hence is not so destructive, but the idea once prevailed that it would not exist in high altitudes. That is fully exploded so far as North Carolina is concerned.

"The one locality which has suffered more than any other is also the chief peach-growing center of the state. Here the Scale is generally distributed through a number of orchards, ranging from one to twenty thousand trees each. When it was first detected the growers had the idea that extermination was possible, and many thousands of trees were destroyed that might have been kept in good bearing condition by spraying, in the wild hope that the pest would be absolutely exterminated. In later years these same growers having had further experience, have seen that the idea of extermination is impracticable, and have set to work with the idea of holding the pest in subjection. They, therefore, *treat* the trees instead of cutting them down.

"Growers in that locality who are fully aware of the presence of the pest are still planting out larger orchards, in the full knowledge of the fact that they will have to be regularly sprayed each year in order to keep them in bearing condition. This indicates that to those who know it best, the San José Scale is not so much to be dreaded *if* one *will give the trees requisite treatment*, but, on the other hand, it also shows that it will not do to neglect infested trees, and they must be treated thoroughly and regularly, if the trees are to be expected to live.

"North Carolina, in common with other states has a law compelling every nursery in the state to be inspected every year to see that the salable stock offered is apparently free from serious pests. In addition to this every nursery which grows stock of apple, apricot, pear, peach, plum or quince, is required to fumigate such stock before it is sent out from the nursery. This is designed to give the patrons of these nurseries the best possible protection from stock infested by the San José scale. The difficulties of preventing absolutely the sale of infested stock cannot be appreciated by one who has not had experience in this work, but we believe that we are getting our nurseries into such condition that stock purchased from them is as safe from the Scale as that purchased in other states.

"The North Carolina Department of Agriculture has taken a special and commendable interest in furthering the fruit interests in every way within its power, and has from time to time published articles dealing with the matter of spraying, etc. There has been such a demand for these that we are kept almost out of all literature of the kind."

SOUTH CAROLINA—POMOLOGICAL DISTRICTS 4, 5.

By H. B. Buist, Chairman.

Fruit growing in South Carolina has passed the experimental stage and it has become a well known fact that no state in the south offers greater inducements to the intelligent fruit-grower. South Carolina contains some thirty thousand square miles, one-third of which is well suited to fruit growing. Through the middle of the state there is a section known as the Ridge Spring Section, now largely devoted to peach growing, which has had but two failures in thirty-five years. Thousands of acres are being planted to new orchards, prompted by the success of a few men like Col. R. B. Watson, who had the courage and faith to abandon "all cotton growing" and begin a new line of agriculture that is destined to add greatly to the prosperity and happiness of the future citizens of our state.

The high level ridges of sandy and gravelly soil with red clay subsoil is best suited to the peach, plum and grape. The apple and pear does best upon our red and chocolate soils. Much valuable work is being done at the South Carolina Agricultural Experiment Station, located at Clemson College, S. C., by Prof. C. C. Newman, relating to fungus diseases. Concerning *Brown Rot*, the great drawback to successful peach and plum growing, Prof. Newman says: "It is no longer an experiment but is a recognized fact that this disease can be controlled when properly sprayed with *Bordeaux Mixture*."

The proper use of bordeaux even in unfavorable seasons has resulted in the saving of from seventy to ninety per cent. of the peach and plum crop.

The transportation problem is at present fairly good considering the limited amount of fruit to be shipped and will be bettered as soon as increase of haul will justify the railroads in giving cheaper rates and better service.

We have lately organized a state horticultural society which has taken the fruit interests in hand with beneficial results. The advent of the San José scale *has not* discouraged the planting of orchards.

TENNESSEE—DISTRICT 4.

PROFESSOR C. A. KEFFER, CHAIRMAN, KNOXVILLE.

General Discussion.—The present status of horticulture in Tennessee is difficult to define because the old-time methods and the old-time orchards are passing away and the modern commercial orcharding has been introduced in comparatively few sections of the state. Old planters everywhere say that orcharding has ceased to be profitable in Tennessee and recount tales of the wonderful success of all kinds of fruit in the days before the war.

In various parts of the state, notably in Rhea and Bradley counties, a very large acreage has been planted to peaches within the past six years, and new orchards of large extent are being planted yearly. These peach lands occupy gravelly clay ridges for which no use had been found until the orchards were planted. A careful inspection of the oldest orchards in these counties convinces one that the ridge lands are well adapted to the peach, for the growth and financial results thus far fully equal the best of the Georgia peach sections. It is as yet impossible to define the extent of the peach lands in Tennessee, since experimental plantings have been made on a large scale in only a few counties. Aside from the counties mentioned there are successful peach orchards on the higher ridges of Davidson and adjoining counties, in middle Tennessee and in Claiborne county in east Tennessee. A more or less superficial examination of the mountain regions of the state leads to the belief that the peach industry can be very much extended and that there is a very bright future for peach growing in this state.

The difficulties in the way of success are the same as are met with in the older centers of peach production; namely, late frosts and insect and fungous enemies. The San José scale has been and is a serious pest, and as yet the legislature of the state has made no provision for the protection of orchards, although a rigid inspection of nurseries is provided for by law.

With the increase in commercial orcharding very much better methods of tillage and of orchard management generally are being adopted. The orchards of the Ellis Brothers at Dayton, Rhea county, and of the List Brothers in Bradley county, are in as fine condition as can be found anywhere ; and as these are in centers of increasing interest it may be safely assumed that the experience of these men will have a notable effect on orchard management generally.

On Classes of Fruit.—The Kieffer pear has been planted widely throughout the state, but there are few commercial orchards of pear anywhere. At Huntingdon, Carroll county, in Middle Tennessee, is a Kieffer pear orchard of 500 trees, and so far as I know this is the largest in the state. The trees are in vigorous health and have produced a few fine crops. They are still young.

Commercially the apple has not been extensively grown in Tennessee. The export of apples from this state is practically nothing. Orchards of early fruit for Northern markets have been lately planted in the vicinity of Memphis and of Knoxville, and from the few reports thus far received there is promise of a profitable industry in such varieties as Early Harvest. The lowlands of the state do not give much promise for winter apples. The growing season is very long, resulting in the early maturing of the crop, thus impairing its keeping qualities. There is no question, however, but that the higher mountain valleys of east Tennessee and favorable sites on the Cumberland plateau are well adapted to the cultivation of winter apples. The city of Knoxville is abundantly supplied with apples from Sevier, Blount and Cocke counties, the fruit being hauled by the wagon load, in many cases a distance of 75 miles, to this market. The character of the fruit delivered here warrants the belief that these mountain counties will ultimately see a very great acreage in apple orchards. There are orchards of from 20 to 40 acres extent in the vicinity of Pomona and Crossville on the Cumberland plateau. An inspection of these orchards made last year warrants the belief that with proper culture they would prove profitable, and the owners of a few of them report excellent crops even with the very limited care that is given them.

The strawberry is very extensively grown in Tennessee for Northern markets. Along the line of the Mobile and Ohio Railroad in West Tennessee and the Cincinnati Southern in East Tennessee and in the vicinity of Chattanooga thousands of acres are devoted to the cultivation of the strawberry. The towns of Trenton, Humboldt, Dyer and Dayton ship hundreds of carloads yearly.

The raspberry and blackberry have no commercial standing in Tennessee fruit production. The blackberry is native throughout the State and succeeds better than almost any other bush fruit, but it has not been extensively grown for shipment, and for local market the wild fruit supplies practically all demands. Raspberries succeed so much better in the more Northern states that they are not regarded as a profitable crop in a large way in this State.

Truck farming is becoming a very important branch of horticulture, in the western part of the State particularly. Extensive areas along the line of the Illinois Central, the Mobile and Ohio, the Louisville and Nashville, and the Nashville, Chattanooga and St. Louis railroads are planted to trucker's crops for Northern markets. The tomato is probably more largely grown than any other vegetable ; but beans, spinach, cabbage and other early vegetables are extensively grown. As the industry is increasing rapidly it is reasonable to suppose that it has proved profitable. In almost all parts of the State the climate permits the cultivation of the soil throughout the year. Potatoes can be planted in December and harvested in July and a second crop be grown on the same land. Fall gardening of all the common vegetables is possible throughout the State. Plants of the cabbage tribe fail during the heat of summer, but the early forms are successfully cultivated. Melons and the cucurbits generally are unusually successful.

Native varieties.—Unusual interest attaches to varieties of fruits of Tennessee origin, as it is believed that there is greater promise from these than from many of the standard varieties which have originated in other sections of the country. My predecessor, Professor R. L. Watts, collected a number of varieties of seedling apples which he considered of superior merit, and these should begin bearing next year. The trees form a very interesting part of the experiment orchard at this Station. Professor Watts issued a couple of bulletins on apples of Tennesee origin, which attracted much attention in various parts of the country. My attention has been called during the past year to a seedling pear which originated in the grounds of Capt. J. C. Hodges, Morristown, Tenn. Mr. Hodges sent me specimens of the fruit this year, but unfortunately a severe wind blew all the fruits from the tree and the specimens were thus blown off a full month before the usual time for picking the fruit. Grafts of this tree have been secured and are growing at the Station. W. W. Wallace of Harriman, Tenn., has originated a remarkably fine strawberry, which has not yet been introduced in the trade. The fruit is of the largest size and the richest coloring, and Mr. Wallace says it stands shipment unusually well. An effort will be made by the Tennessee Station to continue the investigation of seedling fruits on a larger scale, and I would be pleased to provide experimenters in other parts of the country with a limited quantity of cions of such varieties as are now available for distribution in exchange for new kinds of Southern origin.

Knoxville, Tenn., Sept. 4, 1903.

FLORIDA—POMOLOGICAL DISTRICTS NOS. 5, 6 AND 7.

Professor H. Harold Hume, Lake City, Fla., Chairman,
Assisted by D. L. Pierson and C. T. McCarty.

The horticultural conditions in Florida are steadily improving and the state is rapidiy recovering from the effects of the disastrous freezes in years gone by. It is a fact that horticultural work in Florida is on a safer and a surer footing than ever before and the cash receipts for horticultural products sent beyond the confines of the state during the past season full equal those received during any previous season. At one time the citrus fruits constituted our sole stock in trade, and while they still remain the most important, other fruits have come into prominence and a great trucking industry has sprung up. Taking everything into consideration we are as well off from a monetary point of view and we have improved our conditions by diversifying.

Citrus fruits, especially pomelo.—New districts are being opened up, and old ones are again coming into prominence. Citrus fruit culture for a time moved southward. The southward movement has not stopped, but the past few years of freedom from freezes and the satisfactory protection of citrus trees have restored confidence, so much so, that to a very considerable extent, the citrus industry is getting back on to its old territory. The lemon as a commercial fruit now receives little attention comparatively, and whether we shall see a revival of interest in this fruit is doubtful. It has been replaced by the pomelo, perhaps to the advantage of all concerned. The pomelo, a new fruit from a commercial standpoint (sold in northern cities in the early 80's at 50c a barrel), has won such an important place in the markets of the country and on the bill of fare of the people that it must be given an abiding place in the list of staple fruits.

There was much just complaint about the way our citrus fruits went into the market in 1900 and 1901. The condition has greatly improved, thanks to the vigorous protest from our best horticulturists and the cut in prices; the latter the more weighty force by all means.

Pineapples.—The pineapple crop of the past season was the largest in the history of the industry in Florida; a rough estimate would be 400,000 crates. Prices ruled somewhat lower than in previous seasons because the crop was fully a month earlier than usual, which brought it into the market with the Cuban crop. But the increased output went a long way toward making up for the reduced price. The interest in this industry still continues unabated.

Sub-tropical fruits.—Year by year, the distinctly tropical fruits are receiving more attention and ere long the culture of the avacado pear, mango, guava and other fruits will rank with the more important fruits of the state. All that is needed is a little more cultivation of the taste of the consumer, and an increased number of varieties. Both will come in time.

New Fruits.—A number of very important new fruits have been brought forward in Florida recently. Among these may be mentioned the Standard and Bayley pomelos, the Oneco Manderin, the Schley pecan, the Howe and Terrel plums and the Sante Fé peach.

Unprofitable fruits and plant breeding.—For many years, Floridians have planted Japan plums to their disgust and chagrin. The venture has always proved an excellent means for getting rid of surplus cash. The Japan plums as a group, although recommended in our catalogue for planting in the state, are a humbug. Kelsey has been about the only one that has liked its new environment sufficiently to condescend to fruit, which it usually does once in every three or five years. But from it have originated three seedlings of note. These are the forerunners. Others will follow. The one most generally known is Excelsior, originated by G. L. Taber. The other two varieties, fully equal or superior in quality, though as yet comparatively unknown, are Howe and Terrel. This last named variety is without question the finest plum yet originated for Florida and though it is usually unsafe to say much about new varieties until after four or five years have elapsed. The Terrel plum will undoubtedly prove to be a profitable variety and a valuable addition to our list of fruits.

As an evidence of the interest the people of Florida are taking in Horticultural work, I may say that the membership of our Horticultural society last year was over 800, a very substantial increase over any previous year.

I append herewith the reports for different sections of the state prepared by Messrs. Pierson, Frink, McCarty and Reasons. That of Mr. Reasons, dealing with new and noteworthy fruits, will be found to be particularly interesting.

FRUIT INDUSTRIES IN WESTERN FLORIDA.

By D. L. Pierson, Monticello, Fla.

It may be said that horticultural industry in this section is at a standstill as very few fruit trees are being planted at this time, if we except nut trees. Many pecan trees are being planted and they are of the fine paper shell sorts. In this section, pears (LeConte and Kieffer,) are the main fruit grown, and since the blight has become such a scourge no new plantings are being made and the old orchards receive very little care but seem to yield a considerable amount of fruit notwithstanding the seeming neglect, and many persons seem to think the trees do better if left to themselves as the blight affects them less. Peaches are a failure in this section but grapes and plums do very well but are not planted in a commercial way, in fact very few have them even for their own use. A lack of knowledge of how to care for trees and vines is probably one reason for this scarcity of fruit even for home use.

We have no organizations for the handling of fruit and the pears are shipped direct to commission houses by the several growers or are in a great many cases sold to local buyers who ship in car lots.

Nothing is attempted commercially with that part of the crop not shipped out of the state. Hogs and cattle now get the residue after the price does not warrant further shipments.

The trees have an annual pruning in the spring and the weeds and other growth of the season are plowed under during the winter. This is the practice where trees are old and large as they shade the land too much to permit of other crops being grown among them. In younger groves general farm crops are grown but I think with a loss of fruit as the trees seem to be more faithful if they have full use of the land.

As stated above the LeConte and Kieffer are the varieties of pears grown exclusively as other varieties do not thrive in this section. A variety called the Stone, which had its origin in Thomas County, Ga., a variation of LeConte, is attracting a good deal of attention. It is very similar to the parent in both tree and fruit except that the fruit is in shipping condition about two weeks before LeConte. In plums the Excelsior is by far the best variety grown in this section as it is a heavy annual bearer of very fine fruit and could be more largely planted with great profit.

Pears are propagated by root grafting, as the cuttings do not seem to live as well as formerly owing perhaps to the fact that the trees from which the wood is taken have had their vitality weakened by the blight. The stone fruit trees are propagated by buds, Pecans by both buds and grafts. Stocks for pears are imported from the western states as leaf blight is ruinous to the young seedlings here. Plums are worked on Marianna stock grown from cuttings Pecans are worked on seedlings grown from the mixed nuts from our seedling trees.

We are comparatively free from insects and diseases in this section, the Curculio doing most damage to the stone fruits and the blight to the pears. By judicious use of a spray of paris green we are enabled to get a crop of good plums and bordeaux mixture would largely control the blight of the pear if all would use it.

FRUIT INDUSTRIES IN NORTH FLORIDA.

In this section pomological industries are steadily increasing and in some localities at a rapid rate. This is especially true of Alachua county where the planting of peach orchards is being practiced on an extensive scale. In Baker, Duval and St. Johns counties the planting of peach orchards is being carried on, and in Alachua, Baker and St. Johns and also Duval to a limited extent orange groves are being planted. Peaches and oranges are more in favor at the present time than other fruits as they seem to offer greater profits. Pears have been grown to some extent in this section, but the blight has destroyed a number of orchards and those that are still standing are generally unprofitable on account of the blight. Strawberries have been extensively grown in Putman and Alachua counties for some years.

As to transportation problems, this section is perhaps better situated than other sections in the state on account of its proximity to Jacksonville from which point shipments can be forwarded to the northeastern markets by boat. Freight rates are lower than from other sections of the state and the time required to reach the markets less.

Packing is perhaps more carefully done than in some sections for the growers; especially those who are producing fruits in larger quantities have learned that this feature of the marketing of fruit cannot be too carefully done. Nothing has been done, I believe, in the way of storage, but this will probably come when the fruit interests seem to demand it.

There are no fruit growers' organizations of any prominence in this section but these will probably come in time.

So far as I know there has nothing been done in the way of canning fruit for market. What fruit is sent to market is in a fresh state and only such portion canned as is required for home use.

In the way of varieties, there are no new kinds that seem to demand any special attention, but some of the older kinds of peaches being planted are Waldo, Jewel, Angel, Honey, Imperial, Colon, Triana and Florida Gem; in this section the Satsuma orange is the variety that is most extensively planted and on account of its hardiness, early ripening and excellent quality is better suited to this section than any other variety so far introduced. Kumquats are being grown to some extent and these have so far proven very profitable.

Japan plums have been grown to a limited extent, but few varieties bear well. Excelsior has, however, borne well and seems especially adapted to this section. And there is another variety which will be introduced this season which we consider even better than Excelsior—the Terrell plum. Both Excelsior and Terrell are cross bred varieties—Japan varieties crossed with some of our native sorts. The trees are excellent growers and attain large size. The fruit is of medium to large size, of rich color, and the flavor is very fine. Both are clings.

The manner of cultivating orchards differs widely with growers, but probably the plan that has proven as successful as any in a general way is clean cultivation until about mid-summer and then allowing some cover crop, like beggar weed, to grow. This dies down in the late fall and is turned under with a turn plow. In the spring and early summer harrows are used principally and these are run over the orchards every week or so, and if a drought sets in the harrows should be run every few days to conserve the moisture by covering the ground with a dust mulch. Complete commercial fertilizers seem to give best results and are in general use by the larger growers.

It is not necessary with many fruits to give them protection from frost, but with the Citrus fruits this is sometimes necessary and is done by keeping open air fires going, the number and distance apart depending on the severity of the cold spell.

Propagation of trees and plants is left almost wholly with the nurserymen, and the methods employed do not differ very materially from those employed in other sections of the South. On account of our long seasons of growth and generally favorable conditions, nursery stock can be grown at less expense and in much shorter time than in sections farther North. For instance peach trees offered for sale are nearly always summer buds and range in height from 2 to 3 feet to 6 to 8 feet. As to stocks: For peach trees, stocks are grown from native peach seed and give much better results than if seed is obtained from sections farther North. The native varieties being generally stronger growers. There are several stocks used for Citrus trees, but the one that is used principally in this section is Citrus trifoliata. Sour orange, sweet orange and rough lemon stocks are propagated by the nurserymen for sections farther south and occasionally some one prefers them even in this section.

This state has not as yet enacted any laws of moment regarding insects and diseases of trees and plants. It seems to be the general impression that such laws are apt to prove harmful as well as beneficial and with imcompetent administration would be far worse than no laws. Inspection has so far been confined almost exclusively to the nurseries and has been done by the Entomologist of the Florida Experiment Station.

FRUIT INDUSTRIES ON THE FLORIDA EAST COAST.

BY C. T. MCCARTY, ELDRED, FLA.

The status of the fruit interests of the lower East Coast of Florida is full of food for reflection and full of hope for the future. The small beginnings of 15 or 20 years ago have grown Alladin-like and today the train load takes the place of the rowboat load of a decade ago. This is especially true of Pineapples and Citrus fruits. The development of the Mango and Avacado Pear industry, when the fact is considered that both fruits require the education of the public taste, and the well-known Anglo Saxon fruit eating impulse is well nigh marvellous. These industries are to a large extent yet in the experimental stages but sufficient progress has been made to justify the brightest hopes of the advocates of these fruits.

Along the lines of rapid development of the tropical and semi-tropical products of the State, the counties of Brevard and Dade are easily in the front rank and this without disparagement to the other parts of the State where very fine progress is also being made. The location of these counties along the lower East Coast contiguous to the Gulf Stream, as well as their latitude, makes for them the conditions conducive to the best development and greatest success of the group of fruits we are now considering. The soil and moisture conditions are no small factor in the problem of production ; and in these the lower east coast is unexcelled. Farther north and remote from the Coast, there are some regions where the fruit interests have lost ground during the decade just past, a decade which has been trying for the Florida horticulturist. It requires, after all, two or three decades to fully determine the adaptability of varieties or the proper and safe habitat of any fruit industry.

The transportation of the fruit crops of the East Coast has improved greatly in the past few years. From the slow, expensive and inconvenient methods of the steamboat, to the present, daily, all-rail service marks one of the most noteworthy steps of our evolutionary processes.

The methods of harvesting, packing and handling the fruit have more than kept pace with the progress of the business. Formerly the package was primative, bulky and unwieldy. The wrapping with fancy paper and the neat attractive labelling of the crates make the packages of today present a decidedly more attractive appearance and assists greatly in selling the product. Our Indian River and Lake Worth Pineapple Growers' Association and the kindred organizations among orange and other fruit growers have materially assisted in solving the problems of distribution, the securing of lower tariffs on the fruit and the adoption and maintenance of uniformity and excellence of selection and grading. All the benefits of organization and unity of action have followed these efforts that always follow method in modern business affairs.

The making of syrups, preserves of various kinds and marmalades has been commenced in order to utilize all of the wine apple crop. The latter article, when well made, is of such superior quality, much sought after and will command an increasing market. Canning, evaporating and kindred processes are rapidly coming into general use and there should be more of it in order that the waste fruit may be turned to profitable account. The processes are too complicated to admit of description. The writer believes that there is a growing field for effort along this line and hopes to see the grower become more and more a manufacturer.

NEW SUB-TROPICAL FRUITS OF MERIT.

By E. N. Reasons, Oneco, Fla.

For the rapidly developing sections of Florida, and the warmer parts of the Gulf Coast and the southwest, there are a number of valuable introductions worthy of extensive planting. They may be placed under two heads, tropical and semi-tropical. The tropical fruits may be produced in southern Florida and southern California in the open air in proper locations; the semi-tropical throughout the warmer parts of the Gulf Coast region, lower New Mexico, Arizona and a great area of California.

TROPICAL.

Pineapples,—*Green* and *Red Ceylon*, two sorts introduced from Ceylon about 1898. Quality excellent, and winter-bearing, said to excel the Smooth Cayenne.

Banana—*Dacca*, very valuable dwarf sort; quality and flavor somewhat like Hart's Choice, but with bunches smaller, and individual fruits larger. It scarcely ever exceeds seven feet in height, a good point.

Guavas—*Psidium molle*, the "sour guisaro" of Costa Rica, has been found to be a valuable acid sort especially suitable for jelly. *Calcutta Apple guava*, another sour guava with a decided apple fragrance and high value for jelly making. *Guinea*, a large guava with very thick meat and few seeds. It is both pink and white fruited, of delicious flavor, fine for dessert or preserving All three sorts of guavas here named are very prolific and bear from two to four crops per year.

Mangoes—*Mulgoba*, an Indian variety now bearing in Florida. This is the finest mango yet grown in America, being of fine size, and with entire freedom from fibre; flavor first class. There are a number of Indian varieties now being experimented with in Florida. *Long* (or Bishop) a very good West Indian sort from Jamaica, but of varying quality, having been grown from seed. Size large, with more or less fibre; flavor sweet and rich. Mangoes are now being budded to insure unvarying quality.

Carissa arduina, the Maritzgula or Amatungula of Natal. A spiny evergreen shrub, enduring some frost, and bearing scarlet berries about one and a half inches long by three-quarters of an inch thick, tasting not unlike red raspberries. It is a useful plant for hedges.

Casimiroa edulis, the "sapota blanco" of Mexico. A large tree, bearing fruits the size, and with somewhat the flavor of peaches. Does well in Southern California and stands some frost.

Aberia Caffra, the Kei-apple of Natal, South Africa. The bush may be used for hedges and the rather large fruits for preserving. A luxuriant grower in very poor soil.

Anacardium occidentale, Cashew apple and nut. A large spreading bush or small tree, bearing white, red, or yellow fruits of large size. The juice is sub-acid and the seed which is borne prominently at the end and outside of the fruit, may be roasted and eaten like a chestnut.

Cupania sapida, the Akee of West Africa, now naturalized in Jamaica and other West Indian islands. A tall tree bearing rich, red fruits, poisonous when raw, but wholesome when cooked, largely used in the West Indies as a regular article of diet.

Passiflora quadrangularis, one of the Granadilla vines from Central America. This is the largest-fruited Passiflora and perhaps the most important; the fruits are highly prized in the tropics.

Lucuma rivicoa, var. angustifolia, the Egg-fruit, or Tiessa, of Cuba. A ropical tree of small size, bearing sweet rich fruits the size of large plums and tasting "like sweetened hard-boiled eggs!"

Malpighia glabra, the Barbadoes cherry. A handsome and delicate small fruit, of a pleasant acid flavor, resembling in color, and size, large scarlet cherries. It is only a shrub, but bears profusely at an early age.

Monstera deliciosa, the famed Ceriman of Trinidad. A large leaved aroid plant of striking beauty, which climbs tree-trunks or rough surfaces of wood or stone, and bears large cone-like fruits resembling in flavor a combination of pineapple and banana.

Triphasia trifoliata, the Philippine lime berry, a lowly member of the great citrus family, is a small shrub of a spiny nature. It bears small red fruits the size of small cherries, rich and excellent when preserved, which fetch a high price in the world's markets, being a first class delicacy. The bushes may be profitably grown in hedges, in spots free from hard frosts.

Corsican Citron.—This is the real commercial citron, the only sort worth growing, introduced by the Department of Agriculture at Washington, after much trouble and expense. Fruits are large and tree more tender than the orange requiring a location free from hard frosts.

SEMI-TROPICAL.

Rubus trivialis, (var.) the *Manatee dewberry* of South Florida. This bears an abundance of black berries of a melting luscious quality fit for any table or market. It may be grown into the Tropics, and does well in India.

Northey Berry.—A supposed cross between a blackberry and dewberry, originating in Lake County, Florida. The habit of the vine in growth and fruiting is similar to the dewberry, and it is very prolific. Color wine red; size, medium to large; quality soft and delicious, of a delicate raspberry flavor, richly sub-acid. Likely to prove of wonderful value for the Tropics, and the extreme south.

Myrtus tomentosus, the downy myrtle of India. About as hardy as the Cattley guava; a handsome shrub, evergreen, bearing a profusion of pretty pink flowers followed by purplish berries about three-quarters of an inch long, sweet and meaty.

Opuntia Tuna, the tuna cactus of Mexico, naturalized on the West Coast of Florida. It is a large-growing prickly pear, the leaves and fruit being valuable for stock feeding in arid regions. It bears large purple fruits containing a highly colored juice valuable for coloring jellies, cakes, ices, etc., and used for preserving.

Opuntia ficus-Indica, the indian fig cactus from the West Indies. This attains an immense size, often ten feet high and bears quantities of lemon colored fruits two or three inches long, of a sub-acid flavor. This cactus is spineless, and very hardy.

Sour Rangpur Lime, or the mandarin lime of India. The loose rind with its high lobster-red color; extremely acid, well-flavored juice; and hardy nature of the tree, render this a grand acquisition. The tree is almost as hardy as the common sweet orange as regards frost, and fruits prodigiously.

Royal pomelo.—A south Florida product, originating at Oneco, accurately described by Prof. H. Harold Hume in Bulletin 58 Florida Experiment Station. Fruit is early, of small to medium size, very rich and sweet; a very satisfactory early grape-fruit.

Pernambuco pomelo.—This has also been described in the bulletin on pomelos by Prof. Hume.—Fruits are large, late ripening, and contain the characteristic bitter of the old grape-fruit. Holds on the tree very late in the season, and has proved a good market variety, largely in demand.

Oneco Mandarin, last but not least on my list. This is the finest of all Mandarin oranges yet originated (see Bulletin on Mandarins, issued by the Florida State Experiment Station, Lake City, Florida, for analyses and full description). From India, a result of centuries of culture, this has developed with our favorable soil and climate into a delectable fruit "fit for the gods." It has a sweet, delicious flavor wholly its own, little rag, high red color, and is of medium size. The tree has proved exceptionally hardy, standing severe frosts unharmed. The season of ripening is through January, February and March, often holding till April, here in Florida, making it very valuable for market, a time when other Mandarins are scarce.

ILLINOIS—POMOLOGICAL DISTRICTS 4, 8.

GEO. J. FOSTER, CHAIRMAN, NORMAL.

Illinois stands today in the front ranks of the fruit growers of America, and her motto is "Most and Best." Thanks to her able corps of scientific investigators and instructors at the College of Agriculture the problems of apple scab, Codling moth and bitter rot have been solved, while that of the San José scale no longer terrorizes her people, being held in check by wise legislation, and rigid inspection within the limits of the few localities where it first appeared.

New Areas.—New areas are being constantly planted, the old ones are being better cared for and more thoroughly cultivated than ever before so that the coming year will doubtless witness by far the largest crop Illinois has ever grown in all lines of horticultural products.

Manufacturing.—Each year adds some new device, new "plant" or new machinery for the better utilization of the fruit crop.

Statistics are not at hand as to the quantity of fruit products manufactured in Illinois but immense quantities of fruit are utilized in this way, and particularly is this true of apples. In the manufacture of cider and cider vinegar, there are mills scattered all over the state. These will range in capacity from those which make only a limited quantity, and supply a local market, to those using from 60,000 to 100,000 bushels of apples in a season, and in the aggregate large quantities are used.

The apple evaporating industry is also a large one and gives employment during the season to a large force of employees, and these establishments range in size from those of a capacity of 1,000 to 1,500 bushels per day, and a capacity for the season of 150,000 bushels, down to what seem by comparison to be small affairs, but which in the aggregate utilize large quantities of fruit. Apple butter made wholly from good apples and cider, is also largely manufactured in some localities and is a line that will be materially increased. So between the canning factories, evaporators, cider mills, vinegar works and the like, every apple finds its place and market, and every part of the apple except the stem.

Markets.—In the matter of markets Illinois is also very fortunate with two larger cities at either end of the state as well as several others only twelve or fifteen hours distant. Her fruit and vegetables not needed for local consumption are daily put upon these great markets in a perfectly fresh state.

Transportation.—Transportation has been reduced to its very lowest rate through the formation by the growers of shipping associations or fruit growers' organizations which forward in train load lots, thus getting freight rates that could not possibly be secured in any other way, indeed the margin thus obtained over individual shipments would often make a good profit in itself.

Storage.—The manner of storage has been very carefully looked after the past two or three years and experimental tests have been made between cool and cold storage and the proof established that the grower can better afford the cool storage at home than the cold storage of the city; the ideal condition being that of dropping the fruit from the tree direct into the cooling room and hence the nearer the approach to this ideal the better for the grower.

MISSISSIPPI—POMOLOGICAL DISTRICTS 4, 6, 7.

PROFESSOR A. B. McKAY, CHAIRMAN, AGRICULTURAL COLLEGE.

Fruit Industries.—The condition of the fruit industry throughout the state, commercially, and from the amateur's standpoint, as well, is showing a gradual but decided improvement. The disposition to grow more and better fruit for domestic purposes is especially marked in the more prosperous sections. Commercial fruit growing is confined, of course, to comparatively small areas along the railroads and to within a few miles of shipping points. The major parts of the best fruit sections of the state are, as yet, remote from the railroads. What is known as the Bluff Formation—a strip of high and hilly land a few miles wide and bounding the Delta on the east from Memphis, Tenn., to Vicksburg, Miss.,—is admirably adapted to orchard fruits. The same may be said of the Pontotoc Ridge, a very high strip of land, varying from ten to twenty miles in width and running north and south through several counties in northeastern Mississippi. Several similar sections still lacking railroad facilities might be named in other parts of the state. Among these I mention the hill and table sections of Jasper, Kemper, Newton, Tawamba, Grenada, Calhoun and Marshall counties.

Strawberries, peaches, plums, apples, pears and grapes, in the order named, about complete the list of commercial fruits. Success with strawberries, in so far as yield and quality are concerned, is confined to no one latitude in Mississippi. Crystal Springs, Madison, Durant, Booneville have been prominent as shipping points. Quite a number of new points in central and southern Mississippi are beginning to plant strawberries more or less extensively. Most places are reporting good success.

The peach and the plum are at home in nearly every section of the state They do especially well, however, in the hill and upland territory. Apples succeed best in the northern part of the state. The same may be said for grapes, especially those planted for commercial purposes. But for blight, pears would do well in many fruit sections. The Kieffer seems to be the only variety that has proven profitable for market. Orchards cultivated until about ready to set the first crop of fruit and then left to grow slowly in hard sod land seem to be far better, live longer and produce more abundantly than those which are regularly cultivated. The wild blackberry abounds everywhere. Some attention is now being given to cultivated varieties, and with good success. The raspberry does fairly well in the northern part of the state but does not survive the long warm summer so well in central and southern Mississippi.

Last year marked a good yield for nearly all fruits. This season nearly all tree fruits except apples failed. In a few orchards, partial crops of peaches and plums are reported. The apple crop is exceptionally good.

Marketing.—Some attention has been given to the problems of transportation and distribution, and considerable progress has been made in the right direction; but much remains to be done along this line before commercial fruit growing in Mississippi can take the place this industry so richly deserves.

Better methods of cooling down fruit immediately after it is gathered, and of keeping it so until safely and properly packed in refrigerator cars ; more rapid transit and better guarantee as to keeping cars properly iced ; better arrangements with the railroads for diverting cars directly to points where goods are to be consumed, and quicker methods of reaching the consumer after goods are landed at destination, are among the questions of vital interest to growers so far distant as we are from the centers of population.

During the past two years more local truckers' organizations have been organized than for years past. These are doing much in the way of inaugurating better methods of grading, packing and otherwise handling fruit for market.

Manufacturing.—With the exception of a few small canning factories no effort has been made to utilize the fresh fruits which fail to find a market.

Varieties.—For commercial purposes the following are worthy of special mention:

Strawberries ; Excelsior, Lady Thompson and Klondike.

Peaches ; Carmen, Greensboro, Family Favorite, Elberta, Crawford's Late.

Plums ; Red June, Burbank, Abundance.

Apples ; Red June, Astrachan, Early Harvest, Y. Transparent, Carolina Watson, Day (a new Miss. product), Rox. Russet, Sauta.

In some of the old seedling peach and plum orchards are found fruit of real merit. It would not be difficult to select from among these a list of kinds much better for the home orchard than from varieties found in our nursery catalogues. The Mississippi Experiment Station has recently taken up this line of work ; and, in a few years, will doubtless be able to show something of merit in apples, strawberries, grapes and blackberries as well as in peaches and plums. Selection and breeding after southern types of merit will develop a list of varieties better adapted to our conditions than those we have been planting.

Orchard Management.—I am glad to report that in nearly every section of the state where fruit is being grown for market or for home use, more attention is now being paid to the details of tillage, cover crops, pruning, fertilizing, etc. Nothing worthy of note has as yet been done in the way of experimenting with irrigation, frost protection or windbrakes.

Insects and Diseases.—We have some of the common fruit pests and diseases. Brown rot on plums and peaches is sometimes very destructive during wet seasons. No yellows and but little rosette and curl has been reported. Speck and apple scab are troublesome with some varieties ; others seem entirely free from any such diseases.

San José Scale has recently made its appearance at several fruit-growing centers, but prompt action has gotten the matter pretty well in hand. Comparatively little damage has resulted, and it is hoped that this pest will soon be rooted out of the few places now infested.

The fruit growing industry in Mississippi is yet in its swaddling clothes. The possibilities which are open to the wide awake horticulturists in this field of work are certainly very great. The situation is just this : Heretofore the fewest number of people had given any attention whatever to the matter of planting fruit, even for home use. A much smaller number had studied the subject from the commercial standpoint. The work of a few individuals doing all they could in an isolated way, had accomplished far more for the advancement of the cause in Mississippi than had been done through systematic organized effort. With the death of the first and only president of the Mississippi State Horticultural Society and the demise, a year or two later, of the worthy secretary, that organization died a natural death. Considerable effort is now being made to reorganize the State Society ; and I predict that one year hence, this organization will be doing efficient work in the pomological field. Truly "The harvest is great but the laborers are few." The climate is right; the soil is right; plenty of rain and sunshine; but few insect pests and diseases common to fruits have found their way to this fresh, new fruit territory; geographically the country is spread out fan-shape before us; in point of earliness but little fruit soil lies south of us. All we want is men and women, and lots of them, trained to the work, and willing to reap as a reward for organized and systematic effort, as large and as profitable harvests as have ever been made in any other section of the United States.

LOUISIANA—POMOLOGICAL DISTRICTS 6 AND 7.

F. H. BURNETTE, CHAIRMAN, BATON ROUGE, ASSISTED BY ROBT. MOORE, NAOMIE, LA.; C. J. OTIS, LAKE CHARLES, LA.; A. K. CLINGHAM, KEITHVILLE, LA.; WM. NELSON, NEW ORLEANS, LA.

The fruit industry is increasing in Louisiana in a great many sections and a number of good-sized, paying commercial orchards of peaches, plums and pears are now to be found. These sections are located in the sandier portions of the state, in the northeastern and northwestern parishes. Where any difficulty exists concerning orchards, it is largely due to lack of proper attention and overbearing when young. Very little has been done under glass. The Northern markets offer every inducement for the extension of fruit growing.

Good refrigerator service is obtained now on all our trunk lines of R. R. and the packing and shipping at most points is taken care of by organizations. These organizations are growing and in a short time exchanges will be established, in order to work more in harmony and to the benefit of all growers.

During the last year several canning establishments have been put up and although they were built for truck products they will serve to make use of surplus stock as well. These are calculated to send out canned products only.

Nothing new can be reported as to varieties. The points receiving most attention are:

1—Setting younger trees—"June Buds." 2—More care in cultivating. 3—Preventing overbearing early in life of tree.

In the matter of cultivation the use of a hoed crop, or clean cultivation is coming into practice. Little manuring is done, except the growing of a crop of cow peas and turning them under.

Gradually but surely the use of home raised seed and fruit pits or stones are being used for stock purposes.

The great need of good laws governing the introduction of infected material is felt. The diseases and enemies are usually well controlled when once they are recognized. The San José scale has not discouraged any of our fruit men, as the nurserymen report a very large increase in amount of sales of fruit trees over last year. There is also a strong increase in the number of fruit trees set out by amateurs everywhere, which in time will be a strong factor in building up the fruit industry of the state.

The one fruit which should be grown more extensively in the central and southern portions of the state, is the fig. It may be grown in untold quantities both for table use and canning purposes. The *New French* is a variety considered by many to be the most excellent of all figs. The orange industry has not increased during the last year, but continues to hold its own. Its culture cannot become general, as its growth is limited to the delta region.

IOWA—POMOLOGICAL DISTRICTS 8, 9.

EUGENE SECOR, CHAIRMAN, FOREST CITY.

Pomological Interests.—For lack of annual or biennial information gathered by the state I may be pardoned for quoting from a letter from the Department of Horticulture at our Agricultural College covering the decade of 1890 to 1900, which will give some idea of the growth of horticultural interests in this state:

Growth of Horticultural Interests.—"Statistics show a wonderful increase in orchards of the state. A comparison of the government census for 1890 and 1900 shows that Iowa has made a wonderful advance in the growing of orchard fruits. In 1889 the orchard products, including the small fruits, amounted to $693,947, while in 1899 the products of the orchards alone amounted to $1,849,767, or an increase of nearly 300 per cent. It will be remembered, too, that this was the season following the hard freeze of 1899.

"But the increase is better shown in the increase of the number of trees in orchards. In 1890 there were 4,197,913 fruit trees; in 1900, 9,590,132. The number of apple trees in the state has nearly doubled. In 1890 we had 3,640,588 apple trees; in 1900 we had 6,869,588 The planting of cherries has shown a more phenomenal increase than the apples. From 199,067 in 1890 they have risen to 791,327 in 1900. In spite of pear blight and all other diseases that the pear is heir to there has been a greater increase in the planting of pears than of any other fruit. From 12,757 trees in 1890 it has increased to 104,046 trees in 1900. The planting of peaches has increased from 82,233 in 1890 to 516,145 in 1900. Plums have increased from 260,600 trees in 1890 to 1,302,217 in 1900."

Horticultural Agencies.—The causes contributing to this increased interest, are, undoubtedly, first and foremost, the State and District horticultural societies. The State Society maintains headquarters at the state capitol, with a very efficient secretary always present and helpful. He has inaugurated some plans looking to a better understanding of the local conditions in the different parts of the State, showing by shaded maps localities where certain varieties are most successful. He, also, by personal and public correspondence tries to keep the subject before the people. The district societies also, through their annual migratory meetings, discussions and reports (which are embodied in the annual volume of the State society) are widening their circle of influence for good.

One distinctly horticultural journal and all the agricultural journals devoting columns to the special subject keep the matter before the reading and thinking farmers.

The Agricultural College through its horticultural, entomological and botanical departments is assisting by issuing bulletins and answering questions through the papers, so that there never was a time when so much correct horticultural information was available as now.

The idea is gaining ground, too, that larger orchards pay better than small ones, because it pays better to ship in large quantities and the local market is not so congested, therefore, fruit growing, like everything else, is becoming more and more specialized and people are planting extensively enough to warrant shipping in car lots or building cold storage plants.

Transportation Problems.—Notwithstanding the facilities offered by many railroad companies to producers of fruit along their lines, I understand there are some complaints by apple shippers and others regarding the cars furnished by some lines—ordinary box freight cars being supplied. Some complaint also is made regarding rates on fruit in less than car lots.

There are no fruit growers exchanges in this State organized for the purpose of handling the surplus.

Manufacturing.—So far as I can learn there is little or no effort made to utilize the surplus product of fruit in a commercial way. Families can for their own supplies or purchase the canned article of their grocer largely put up by factories outside the State. Our people have not yet come to that condition where they can appreciate small economies. There is enough fruit wasted every year to supply half our population.

Varieties.—If one were to ask all the apple growers of this State which was the best and most popular all-purpose apple grown I believe a majority would answer Wealthy. I am quite sure this would be true in the northern half. It has good flavor, good color, and while only a fall apple it keeps well in cold storage. The tree is vigorous over a wide range of territory, bears young and yields heavily.

Northwestern Greening, is being extensively tried in the north as a late keeper, but it is not yet beyond the experimental stage.

Patten, is a splendid tree, good bearer, hardy, and the fruit is unexcelled for culinary use, but as it is about the season of the Wealthy and lacks the color and flavor of the latter can hardly take its place.

In the south half of the state Jonathan and Ben Davis are standard commercial apples, with a number of other varieties which have their admirers.

Orchard management.—Tillage, mulch, bluegrass sod, clover and other cover-crops all have their advocates and it is uncertain which is practiced the most. Young orchards, however, are more thoroughly cultivated than formerly with no attempt to raise crops between the rows. With thorough cultivation with disk or cutaway harrow, an orchard can be brought into profitable bearing several years younger than would otherwise be the case.

Insects and fungous diseases.—Insect pests seem to be on the increase. Spraying is not common. The canker worm and codling moth do a lot of damage and the apple curculio was extremely bad in some parts of the State the present season. The question arises whether the proper sanitary treatment of an orchard would be as effective as spraying, that is, whether preventive treatment would not to a large extent take the place of curative measures. The San José scale has not obtained a foothold in Iowa so far as I am able to learn. We have a law providing for the inspection of nurseries, but the appropriation is so small a thorough inspection of orchards is impossible.

NEBRASKA—POMOLOGICAL DISTRICTS 8, 10.

PROFESSOR R. A. EMERSON, CHAIRMAN, LINCOLN.

In general there is an increased interest in fruit growing in Nebraska. Present planting, however, is confined in the main to small orchards and fruit gardens. The general prosperity of our farmers is largely responsible for this awakened interest in home orchards. With the general farmer here, increase or decrease in fruit planting is determined to a much greater extent by good or poor corn and wheat crops, than by good or "off" years in fruit production. As the State increases in wealth, home orchards are bound to increase.

Commercial orcharding in western Nebraska is losing rather than gaining ground. From four to eight years ago many orchards of from five to forty acres in extent were planted in the irrigated districts of central and western Nebraska. Unsuitable varieties, improper late summer irrigation with its accompaniment of severe winter injury, and the other conditions incident to the development of the fruit industry in a new region, are responsible for the change. With suitable varieties and proper management, there is little doubt that in time both the irrigated lands and the sub-watered valleys of Central and western Nebraska will produce fruit sufficient for local consumption.

In the eastern part of the State, where fruit growing has become a really important industry, few very large commercial orchards are being established at present, though there are many smaller ones of from five to twenty acres. The present tendency is towards smaller orchards and more of them. With farm crops and stock to furnish revenue at first, farmers do not feel the expense of raising an orchard to bearing age as they do in case their whole farm is in fruit and they have no other resource to fall back upon. When once established, these small orchards, provided they are well cared for, are often the greatest source of revenue of the farm.

Cold winters, dry summers, local hailstorms, occasional late frosts, insects, diseases, all have their effect in discouraging some fruit growers, but the better class take these experiences as lessons in varieties, methods of culture and the like, and adapt themselves to their conditions accordingly.

Naturally the orchards of commercial size are continually given better care as regards cultivation, pruning and the like. Progress in the case of family orchards is not so marked. In regard to fighting insects and diseases directly, there is a rather widespread opinion, even among commercial orchardists, that spraying is not so successful here as it is said to be in other regions.

MINNESOTA—POMOLOGICAL DISTRICT 9.

PROFESSOR SAMUEL B. GREEN, CHAIRMAN, ST. ANTHONY PARK.

In General.—The condition of the pomological industries of Minnesota have very much improved in the last two years. There is an increasing faith in the possibilities of raising fruit in this section, and an increasing desire to do so, owing to the fact that there has been a very considerable improvement in the condition of the rural population which has become more settled and seems to desire to have more home comforts.

There has been a special increase in commercial orcharding as well as that of home gardening, and while a few years ago orchards of one to several thousand trees were uncommon, there have been many orchards of this size planted in the favored fruit locations in this state within the last two years.

There seems to be a general feeling that the Wealthy is the best variety for us for general marketing, owing to the fact that this variety keeps so well in cold storage.

Several fruit growers' associations have been formed in this state, which mark a new era in the handling of fruit in this section, and they have worked very much to the advantage of the locations in which they have been formed. The transportation companies show a reasonable disposition to assist these industries in whatever way they can. Our people are using more fruits than ever before, and the same condition is probably true of the great territory lying west and north of us, where the demand for fruit seems to be greatly on the increase which demand is largely met from Eastern Minnesota.

There has been little done here in the way of canning or preserving fruits, as the horticulture of this section is only just coming out of the experimental stage.

Of apples the varieties which are most popular now are (in addition to the Wealthy which has been mentioned) Oldenberg and Patten's Greening. The Northwestern Greening is increasing in favor on account of its large size and good keeping qualities, but the fact that it is a little more particular as to location than the varieties mentioned has led to disappointment in regard to it in some sections.

The small fruits that are receiving most attention are raspberries and strawberries. Of the raspberries perhaps there is no variety more popular as a whole than the Loudon, though in some sections fruit growers object very seriously to it from the fact that it will not pull off the bush easily until thoroughly ripe. The King is also a variety that seems to be growing in favor.

Among the strawberries there is still nothing planted here that gives more general satisfaction than the Bederwood and Warfield, but Splendid and Senator Dunlap seem to be increasing in favor.

Among plums the most popular at present are DeSoto of the old list, and Surprise and Wyant of the newer kinds.

The grape industry of this section has received a decided setback, owing to cheap transportation, which permits of the laying down here of eastern grapes at a figure below which we can compete at a profit, owing to the fact that we must cover our vines in the winter. The Experiment Station has introduced into cultivation a grape that seems to be not only very productive and of fair quality, but hardy enough to stand our severe winters without protection. This variety is probably the variety known formerly as Beta but which had been lost to cultivation.

In orchard management.—There has been little done in the way of irrigation as for the past two years we have had plenty of rain. There is an increasing belief in the desirability of thorough tillage for our orchards in summer, due to the fact that this prevents injury from drought, but most of our best orchardists believe in the importance of using some mulch about our trees in winter, especially when the ground is bare of snow, in order to prevent root-killing—which occasionally has done severe injury to the orchard interests of this section.

Some progress has been made in the use of mulch instead of cultivation around trees planted on side hills, as on the bluffs along the Mississippi River, where the slopes are often so steep that cultivation would be out of the question. Fertilizers are not used here to any extent, and are practically out of the question. Stable manure is abundant and is seldom charged for but generally given away in and near the larger cities and towns.

In regard to propagation, much interest is taken in this section at present in obtaining hardy roots for the apple, and with this purpose in view this station has distributed about 40,000 seedlings of *Pyrus baccata* among the nurserymen. This stock seems to be well adapted to some of the cultivated varieties. It has a very fine root system, and those for which it is adapted seem to make a most vigorous growth on it when young, but it probably somewhat reduces the size of the mature tree.

Nursery notes.—In the line of nursery work, some of our better nurserymen have adopted the method of crown grafting apple seedlings in the ground, and in this way succeeded in getting as large trees at two years as under the piece root system they have previously been able to obtain in three years. This has the great advantage of leaving the nursery stock in the ground but one winter.

There has been an increase of scab on apples and the "fire blight" has been especially abundant during the past two years.

There have been no new insects worthy of special note, and the San José scale as yet has scarcely found a footing in this section. Our last legislature passed a reasonable inspection law.

COLORADO—POMOLOGICAL DISTRICTS 10 AND 13.

By Professor W. Paddock, Chairman, Fort Collins.

Fruit growing in Colorado on a commercial scale may be said to date from 1880. Tree planting was begun as early as 1862 but the conditions existing in an arid country were new to the settlers and could only be learned by years of experience. The advancement of the industry was delayed many years because of the prevailing opinion that fruit could not be grown successfully. During the last ten years the increase in acreage has been very rapid; estimates given in the report of the Board of Horticulture for the year 1902, give the area of bearing apple orchards as approximately 40,000 acres. Data from the same source give the number of boxes of apples marketed in the different districts in 1901 as 386,000, while in 1902, 667,000 boxes were marketed, giving a gain of 281,000 boxes in one year. Large areas of orchard are coming into bearing each season, consequently the yield for the State will increase rapidly. In most of the fruit growing sections, particularly on the western slope, new orchards are being planted annually, consequently the yearly output for the entire State will soon be very large. The crop of 1892 was below the average in yield per acre, but the total amount was so much greater than that of former years that considerable difficulty was experienced in marketing the crop.

Heretofore most of our fruit has been consumed by the home markets, but now growers and dealers realize fully for the first time that markets outside of the state must be given serious attention. This means that better culture must be given so as to produce a larger percentage of first class fruit, and that greater pains must be taken in grading and packing.

As is usual in a mountainous country, freight and express rates are high. This is true because it is expensive to operate and maintain railroads, and then because of the conditions of the country many of the fruit growing sections are more or less isolated, thus restricting competition among railroads. Because of the lack of competition express and freight rates from many points are exorbitant. Legislative control of freight and express companies is greatly to be desired.

Fruit growers' associations have been organized in many towns, which have as a rule been very successful in marketing produce and in buying supplies. All are familiar with the name of the Rockyford cantaloupes, and many have heard of the fame of the Greeley potato. The success that has attended the growing and marketing of these products is largely due to combination in marketing. The following quotations from reports given in the last annual report of the Board of Horticulture, will suffice to show that under good management the associations are popular with the growers.

Boulder Fruit Growers' Association.—"There has been a large addition to its membership, fully 75 per cent. of the fruit growers of this section are handling their fruit through the association. The shipments of small fruits through the association comprise about 66⅔ per cent. of the fruit produced in this section, the remaining 33⅓ per cent. being consumed in the home market, and shipped by growers outside of the association." Small fruits are largely grown in this section.

The Delta County Fruit Growers' Association.—"We estimate that we have handled 80 per cent. of the fruit produced in territory tributary to Delta during the past season."

Statistics as to the amount of fruit handled are lacking, but it may be said that large quantities of apples, pears and all kinds of stone fruits are produced.

The Fruit Growers' Association of the Grand Valley.—"Our Association has shipped by freight from this valley the past season, in carload lots, from our three shipping points—Grand Junction, Palisade and Clifton—300 standard gauge cars of peaches, pears, etc., and 160 cars of apples. In addition to this, I estimate we have sent out about 2,000,000 pounds by express, equal to 80 standard gauge cars. * * * We have also handled through our evaporator 300,000 pounds of prunes, producing over 100,000 pounds of evaporated stock, for which we are receiving satisfactory prices.

"Last summer we established an office in Denver, and placed W. E. Gregory in charge. We make our Denver shipments direct to Mr. Gregory and he places our fruit with the wholesale dealers, looks after collections, etc. This move proved to be very satisfactory; in fact, so much so that we have concluded to make it a permanent arrangement. We also had a capable man located in Omaha during the summer fruit season to look after our Missouri River shipments. This also proved so satisfactory that another season we will probably make it a permanent thing, retaining our agent there to look after our apple shipments during the fall and winter. Taking the season as a whole I believe it has proved satisfactory to all of our growers. Our membership a year ago was only about 150 and now it is nearly 300, which shows that growers are learning that coöperation is the proper way to market their fruit. For seven years our association has been under the same management and has kept its door open both winter and summer, and in our opinion, it is the only satisfactory way to operate an association."

The canning of fruits and vegetables is a growing industry. The few factories that are located on the western slope where the stone fruits are extensively grown, are meeting with marked success. On the eastern slope more attention is given to the canning of vegetables, especially tomatoes, peas and corn. One factory owns an 80 acre currant plantation and it is interesting to note that its products are shipped as far east as Boston.

Nothing is being done in the way of evaporating fruits except with prunes, and this is as yet an infant industry. Large quantities of the inferior grades of fruit are allowed to go to waste, though quantities of vinegar are made in some localities.

The average elevation of the more important apple regions of the state is not far from 4500 feet. But a glance at the list of varieties which are most common, shows that the altitude does not affect the general rule of the adaptation of varieties. In looking over the fruit lists that are recommended for the various districts, the following are found to be the leading varieties: Ben Davis, Gano, Jonathan, Missouri Pippin, Walbridge, Willow Twig, Winesap and Lawver. All of these varieties, with the exception of Jonathan, originated in and are representative of the states that lie in the same latitude with Colorado.

The behavior of the Jonathan is worthy of notice. In the east the tree lacks vigor, is unproductive and the fruit is small. But under Colorado conditions, it reaches a high degree of perfection. The tree is vigorous and productive, while the fruit is large and deeply colored.

The Marlboro raspberry, another New York variety, is worthy of notice in this connection. At its home on the Hudson it has always been a weak growing plant, requiring special care. In the small fruit districts of northern Colorado, the Marlboro is the principal variety grown. Here the plants are remarkable for their size and vigor, being as large as the largest Cuthbert. The characteristics of the variety as regards productiveness, size and quality of the fruit remain the same.

Fruit growing on a commercial scale is possible only under irrigation. A large amount of capital is involved in building and maintaining ditches and reservoirs. Clean cultivation is the usual practice, though in some places the use of winter vetch as a manure and as a cover for the land during a portion of the year, is growing in favor.

Pear blight is the worst disease with which orchard men have to contend. It has been prevalent on the eastern slope for 14 years. It was first noticed on the western slope three years ago and it has now spread over a large area, though there are numerous localities that it has not yet invaded. Crown gall is a serious disease under our conditions when it becomes established in an orchard. Many affected trees die within a few years after planting, others are stunted so that they make slight growth and bear little or no fruit, while still others that have shown no sign of weakness during the earlier part of their life, die after they come into full bearing. Eastern nurserymen do not seem to realize the serious nature of the disease as it develops in Colorado, as they continue to ship quantities of infested trees. One county inspector destroyed last year two carloads of nursery stock, most of which was infected with crown gall.

Pear blight has been found attacking apricot trees in one locality where it produced a blight of the twigs and a rot of the fruit. The injury to the trees was not severe but much of the fruit on a number of trees in one orchard was destroyed.

The codling moth continues to be the most troublesome insect pest, but it is being successfully combated where both bands and spray are intelligently applied. The control of this insect in Colorado is complicated, since under arid conditions large numbers of the larvæ pupate in the ground. Woolly aphis is a more dangerous pest as its attacks are often not recognized until the trees show signs of failure. Tobacco dust has been a satisfactory remedy in many instances. San José scale has not yet been found in Colorado.

The State law provides that the commissioners of each county may appoint Horticultural Inspectors, and appropriate county money, at their discretion, for the prosecution of inspection work. Several counties are doing all that can be desired in this respect.

SOUTH DAKOTA—POMOLOGICAL DISTRICT 14.

PROFESSOR N. E. HANSEN, CHAIRMAN, BROOKINGS, S. D.

In general.—The heavy immigration into South Dakota the last three or four years has had a very marked influence on the progress of horticulture. A large area of new land has been brought under cultivation and many of the older farms in the state have passed into the hands of new settlers from the east who are more familiar with horticultural operations than were the pioneers. Advantage of this state of affairs has been taken by unscrupulous agents who have sold nursery stock in immense quantities, much of which was entirely unsuited to the climatic conditions of the prairie northwest. However, where these new immigrants have been careful to secure suitable advice the results have been satisfactory. Enough is now known from actual experience by old planters to justify them in going ahead with their new fruit plantations with a good prospect of profitable returns. In South Dakota the State Horticultural Society and Agricultural College have coöperated in distributing information regarding the best varieties and methods of cultivation. The Legislature of January, 1903, made an appropriation for printing one thousand copies annually of the report of the South Dakota State Horticultural Society. This is the first appropriation given in aid of the State Society which was incorporated under the State laws Jan. 9th, 1890.

Fruit regions.—Strawberries and plums are becoming a prominent industry at points along the Missouri river on the southeastern edge of the state, as at Vermillion. In plums the main market is for late sorts for canning after the hot weather. This explains why the Miner is so popular with planters on the southeastern edge of the state. It being planted in good sized orchards with Forest Garden as a pollenizer. This, however, appears to be the profitable northern limit of the Miner. The largest apple orchard in the State is the Alderman orchard at Hurley, Turner County, started in the seventies and now owned by I. W. Prosser. The past season some ten thousand bushels of apples were harvested. The 130 acres of this orchard contain 7,000 trees, 4,000 of which are Wealthy and the balance largely Oldenburg and Whitney with smaller numbers of other varieties. Ben Davis has proven an utter failure, and other semi-hardy sorts such as the Haas, Plumb Cider, Fameuse, Walbridge and Red Astrachan, have proven unprofitable.

The sheltered valleys of the Black Hills region in the southwestern corner of the state present conditions remarkably favorable to fruit culture under irrigation, and varieties found tender upon the open prairies are grown successfully in these sheltered valleys. The home market, however, absorbs this entire output at good prices. South Dakota orchards in general have not proven a large factor in the general market owing to the large home demand.

Of fruits.—All foreign and southern and eastern plums have proven undesirable. The only plums worth cultivating are the native plums (*Prunus Americana*) such as Wolf, De Soto, etc. The one exception is the Miner, already noted, for a limited area of the State.

Cherries are not hardy at the north but are raised to some extent in the southern counties. The Station orchard at Brookings went out in the winter of 1898–99, either top-killing or from winter-killing of the Mahaleb and Mazzard stocks upon which they were worked. A few Kieffer pears raised near Yankton have been shown at the State Fair but in general pears are conspicuous by their absence. The Russian pears proved hardy about ten years in the Experiment Station orchard at Brookings but finally succumbed to blight. Russian apricots are entirely out of the question. A few peaches have been raised in the southern part of the State but the peach men have kept very quiet since the memorable February of 1899 which caused so much root-killing throughout the Northwest, and even far south and east. At Brookings the writer has found peach trees dwarfed perfectly by working them on Western Sand Cherry (*Prunus Besseyi*) stocks. It was found impracticable to protect the tops sufficiently by laying down and covering with earth or mulch so they have been raised since in tubs or boxes which are wintered in the cellar. The past season was the third consecutive crop of peaches raised on sand cherry roots. This method of course is only for curiosity at the North but the method is worth trying south and east where peach tops are hardy. A plantation of peach trees three or four feet in height would serve a useful purpose in amateur fruit-growing.

Fruit stocks.—In Dakota, in common with a large area of the prairie Northwest, where the severest cold often comes with no snow on the ground, the greatest source of trouble with fruit trees, aside from tender varieties, is the winter-killing of the tender stocks or roots used in the nurseries. For the apple, the common apple (*Pyrus Malus*) seedlings, both Vermont seedlings and French crab, root-kill in nursery row. With cherries, Mazzard and Mahaleb are tender. In plums, St. Julien, Myrobalan, Southern Chickasaw and Marianna are all tender and worthless for the Northwest. For the apple, the Siberian crabs, especially *Pyrus baccata*, are being used with good results so far, care being taken to adopt the Russian method of having the entire root system of the crab and all of the tree above ground of the standard apple. For plums the only safe commercial stock is the northern native plum (*Prunus Americana*); Native plums on own roots also find favor; the Western Sand Cherry is promising as a stock only where dwarf trees of low bushy habit are desired as when grown with tall stem the trees are apt to sag over. In cherries, the problem is still an open one, with indications pointing towards the native pin cherry (*Prunus Pennsylvanica*). In passing, however, it may be mentioned that a form of the Vladimir race of cherry secured in 1897 in Russia by the writer for the United States Department of Agriculture, proved hardy as own-rooted trees in the winter of 1898–99 and these have borne the past two years. These give strong seedlings in nursery. Earlier imported, smaller-fruited forms of the Vladimir also appear prolific in strong seedlings. It seems that the term Vladimir must be regarded as more the name of a type than of one special variety and there is promise of good hardy cherries from this source.

Small fruits.—A large number of varieties of raspberries, blackberries and dewberries, including all those common in the nurseries, have been tested and found wanting at this Station. Without winter protection of any kind, all were usually either killed outright or frozen to the ground each winter, so that no fruit was obtained. When laid down and carefully covered with earth, some would winter-kill entirely, others kill to the ground and bear a few scattering berries. The raspberries did better than the blackberries and dewberries. Last fall my opinion of the matter was summarized in the shape of a bonfire, comprising almost the entire patch. This lack of hardiness should not cause surprise, because our present cultivated raspberries, blackberries and dewberries are natives of the eastern and southern states. It is evident that a new list of varieties must be secured for the prairie northwest, and this we are endeavoring to do by raising thousands of pure seedlings of the native raspberries from various parts of the Dakotas and the Canadian northwest, and also crossing them with the old eastern varieties. Some exceptionally promising hybrids of this kind have already been secured and are now under propagation.

Currants and gooseberries are easily raised and are perfectly hardy without winter protection. Of currants, Red Dutch, Victoria and White Grape are three of the best varieties. Of gooseberries, Houghton is the best for general planting of all the well tested varieties. The European black currant should receive more attention than has been given it hitherto. However, the plants do not appear as resistant to drought as the red and white currants. Currants and gooseberries should be among the very first plants set in the prairie garden.

A large number of varieties of the grape has been tested at this Station, including Concord, Worden, Moore Early and other varieties of the *Vitis labrusca*, or wild fox grape of the eastern states. None have proved hardy, even when laid down in autumn and covered with earth and manure over the earth for winter protection. Some grapes are raised in the southern part of the state, and more vines are being planted in spite of the disastrous winter of 1898–99. For the northern part of the State, plant the native wild grape for the present. It appears probable that we must develop varieties from our wild grapes, *Vitis vulpina*, as found in the northwest. None of the cultivated varieties and hybrids of this species, even the Janesville, so far as tested at this Station, have proved hardy, the parent being of the eastern and southern forms. We are now endeavoring to improve the wild grape of the state as found in the range country west of Pierre, the hope being to improve the fruit in size and quality.

Native fruits.—Of fruits native to this State the dwarf juneberry, sand cherry, buffalo berry, gooseberry and several others have attracted favorable attention and are cultivated to some extent in many parts of the State. It is a fact that in the wild fruits of South Dakota we have the foundation for a great list of hardy and choice fruits. The native cherries, plums, grapes, currants, gooseberries, strawberries, raspberries, juneberries, etc., can doubtless be bred up to equal in size and quality the cultivated varieties. The wild fruits are already superior in hardiness, as the summers and winters of many centuries have fully acclimated them and weeded out individuals of insufficient vigor.

Plant breeding.—All who are familiar with the climate and soil of the prairie northwest and with the history of the fruit culture of this vast region, know the practical importance of this line of work. We must create a new pomology. Almost all the varieties familiar to eastern fruit growers are tender and worthless on the open prairie of a large part of the Dakotas, Minnesota, northern Iowa and the Canadian northwest. With a view to meet this demand for hardier fruits, the writer has engaged extensively in the work of originating new sorts better adapted to the conditions. Upwards of one quarter of a million fruit seedlings are on the grounds of this Station this fall (1903) as the result of this determination. The wild fruits of the prairie northwest form the main material, although some work is being done with the apple.

The methods pursued are mainly the carrying out of the well-known principle, "Excess of food causes variation." Crossing and hybridizing are used as means of hastening the process of evolution by introducing new elements of variation. The chief reliance is placed on selection from large numbers. Some of the crossing is done under glass to guard against undue loss from unfavorable weather conditions at the time of blossoming. One of the main lines of work is the improvement of the native sand cherry (*Prunus Besseyi*). Over five thousand seedlings formed the material for selection in the first generation, and over fifteen thousand in the second generation, most of which have borne one or two crops. Some of the seedlings bore fruit measuring fully three-fourths of an inch in diameter and of good quality, and this the third season from seed. Many thousand seedlings of the third generation were raised last year, and this year over seventy-five varieties have been selected as being worthy of propagation. These are being budded on native plum roots, and an effort will be made to breed them true to seed. Some extra large native seedling plums bore heavily last year. Also some raspberry seedlings of half wild and half tame ancestry, were selected. This spring over 14.000 strawberry plants of some 225 varieties were planted, all crosses of the wild and tame; these were selected from some eight thousand cross-bred plants. The strawberries as brought from the eastern states are not fully hardy in the northern part of South Dakota, and a hardier strawberry is much needed. Some interesting results appear; for instance, the ever-bearing strawberries as imported from France, winter-killed, but their hybrids with wild Dakota strawberries proved hardy.

The field is a wide one and the demand for hardy fruits urgent. The practical importance is self evident, since fruit culture is essential to true home-making upon the open prairies.

NORTHWEST TERRITORIES OF CANADA—POMOLOGICAL DISTRICT 14.

By George Lang, Chairman, Indian Head, Assiniboia.

Assisted By J. B. Merrill, Magrath, Southern Alberta.

In making this my first report to the American Pomological Society I feel in a rather difficult position. In the Canadian Northwest we are with the exception of small fruits only in the experimental stage. That the experiments so far as they have gone are encouraging, there can be no doubt, which being the case a short report on what we are doing and how we are doing it may be interesting to your meeting; more especially as there are so many new settlers coming to us from your side of the line to whom it may be of some use.

It has been fully proven that to attempt to grow fruit on the open prairie without shelter is labor thrown away; but with a good shelter belt of trees set about the fruit plantation all the small fruits can be successfully grown and plums and apples are doing fairly well. The Dominion Department of Agriculture has seen the necessity of this planting of shelter belts and has been for years through the experimental farms supplying trees and tree seeds for that purpose free to all applicants in the territories with good results.

About three years ago the Department of the Interior established a Forestry branch, one of the objects being the distribution of forest trees to applicants to be set out as wind breaks, shelter belts and tree plantations. To all settlers who send in their applications a sufficient number of seedlings from the government nurseries are delivered free of cost at the nearest railway station and the work as to preparation of the soil, planting and cultivation is done under the direction and supervision of the agent. Although this government service is only in its infancy it is astonishing how the demand for trees is increasing from year to year and the satisfactory results of the first year's planting are to be seen all over the country.

Small Fruits.—Currants red and white and black do as well in all parts of the territories. They are quite hardy, fruit every year and have very few insect enemies. We have also a native black currant which is very good and a red that is indifferent. Gooseberries are not so generally hardy, though Smith's Improved, Columbus, Houghton and Lancashire Lad do well, are quite hardy and never mildew. There is also the native gooseberry which is small but smooth and of good quality.

Raspberries do well but require to be covered in winter; however the large crops of fine well-flavored fruit almost every year well repays for that trouble. Rider, Turner, Garfield, Miller's Red, Kenyon and Caroline (white), Older and Hillborn Black-cap have done the best here. The wild raspberry also grows in abundance in the counties and bluffy parts all over the northwest.

The cultivated strawberry has not done well at all. Occasionally you get a very good crop and then for several years hardly anything, which seems very strange in the face of the fact that the wild strawberry grows in profusion in almost every district.

Tree Fruits.—During the first years of the Experimental Farm at Indian Head a number of the apples that had proven hardiest in Ontario were tried but all were killed back. Since then seedlings of *Pyrus Baccata macrocarpa*, *P. b. cerasiformis*, *P. b. Genuina*, *P. b. prunifolia* and *P. b. sanguinea* have been grown. These are quite hardy and fruit every year. Some are good sized well flavored crabs and the fruit of a large percentage of them makes a very good jelly or preserve; but their great value will be as stocks for top-grafting. A number of top grafts have been made of Wealthy, Hibernal, Hyslop, Transcendant, Anisette and Duchess which have stood the winter well but are not bearing yet. A number of hybrids originated and fruited at the Experimental farm at Ottawa, Ontario, have also been set out and have stood two winters. They are growing well but are not old enough to bear yet. Some trees of Wealthy, Transcendant, Blushed Calville and Hibernal have stood two winters. I have also seen some very good specimens of Transcendant grown in different parts of the country.

The following is a report received from Mr. J. B. Merrill of Magrath, Southern Alberta. "I have tried Yellow Transparent, Duchess, Tetofsky, Pewaukee, Red Astrachan, Ben Davis and Alexander apples. The Transparent has bloomed but the fruit fell off owing to the tree being very young. The trees are very healthy and make a fine strong growth and do not winter kill. Raspberries red and black do well owing to the covering of snow secured by a hedge of Artimesia. Red currants and some gooseberries are bearing quite heavy. I mulch currants, gooseberries and raspberries with a thick covering of straw manure. I find all varieties do better and stand the winter better if watered latter part of July and August." (This is from an irrigated district.)

The native Manitoba plum is quite hardy here and by careful selection a very useful addition to the orchard can be made. A number of the finer varieties have been tried but have almost all winter killed with the exception of some seedlings of Weaver and the Aiken plum which do very well. We suffer very little from plant diseases or insect pests on any of the fruit.

There is another subject I would like to bring before your meeting, especially the growers and shippers. We have right here in the Northwest Territories one of the best markets in the world today for fruit of all kinds, a market not half or even quarter supplied. This country is a grain growing and cattle raising one and fruit will be imported for years to come. The farmers in this country are making money and when they make it they spend it. The market for fruit, good fruit, is here. Are you going to get your share of it?

NEVADA—POMOLOGICAL DISTRICT NO. 15.

R. H. McDOWELL, CHAIRMAN, RENO.

There is little to be said regarding fruit growing in this State for the reason that, as a rule, our citizens have been engaged in other work. In this part of the State I know of but one commercial orchard—the owner making fruit raising a specialty. It seems difficult for the majority of our citizens to turn from the beaten track of handling one article, either silver, alfalfa, grain, cattle or sheep. I am not sure that they merit just criticism till they can clearly see a definite reason for so doing. A large number of homes raise enough fruit for their own use and a surplus. Probably seventy men in Reno raise their own apples and in many cases other fruit. Some Reno men who formerly lived in Nye Co. report that very excellent apples are raised,—in some cases 24 apples weighing 42 pounds. About 1889, apples were sold for 12½ cents per pound. Some think that with better railroad facilities, fruit growing will be largely increased ; others, in other sections believe that the fruit crop will be gradually increased in the future. Both, I believe, are right and what they express will apply to localities of different sections of the State. In portions of the state frost and wind are to be considered every season. With insects we are not having much trouble. In quality the fruit is high grade. With but 43,000 to 50,000 people our home market is naturally limited. If we ship to California we have a heavy freight to pay and in square miles, variety of climate and production,—an empire to compete with.

Mr. Dangberg of Douglass Co. reports apples as the main crop for his section. They also raise plums, pears, currants, cherries and strawberries. The distance to the railroad is 16 miles. Market, Reno and San Francisco. He estimates his apple crop for 1903 at 5000 boxes. Greatest obstacle in fruit raising is frost. No preserving except for home use. Not troubled with insects.

Mr. Daniel Bonelli of Lincoln Co. reports that their transportation is by team to mining and dairy camps,—distance twenty to seventy-five miles. A railroad is being built which will improve conditions. No fruit organizations. All kinds of trees and vines are planted and treated indiscriminately, the product being for home use. No preserving is done save for home use—excepting raisins of which some tons are shipped to Salt Lake City from Bunkerville, where the seedless Sultana is grown on about 20 acres. More are being planted as the yield is very satisfactory. It is a strong grower and the leading variety for raisins. Fiher Zagos—also used as a wine grape—formerly had the lead. Muscat Hamburg is the best wine grape in this dry, hot climate. Irrigation and cultivation are necessary. Pruning is of the Spanish stub system, except for American varieties which require stake or trellis. Small plows and cultivators for one horse are used in working an orchard. Propagation of vines is by layers and cuttings—no seedlings have been tried, but with peaches and almonds seedlings prevail ; imported stock does not succeed. Enemies are thrips, raccoon, badgers, quails and dogs No inspection to date and no San José scale noted. Grapes, apples, pears, peaches, figs, almonds, pomegranate and olives are planted. There are also a number of African dates planted. These are promising well but have not come into bearing.

Each farm in the country, where the climate permits, has a garden and orchard in one. All kinds of trees and vines are planted indiscriminately, the product being for home use. The average orchard is a house lot or a town lot of an acre of which about half is fruit trees. The largest vineyard to date contains ten acres which Mr. Bonelli planted from 1868 to 1878 at St. Thomas. Some larger ones of the seedless kind have been planted the present year at Bunkerville with a view of selling in Salt Lake. At St. Thomas 200 acres of almonds were planted 10 years ago, in hopes of a market at a distance, but the result was failure owing to blossoming in early February and damage by March frosts. The orchard now is largely dug up. Other parties keep a few almond trees among other trees in fairly good bearing. The loss, by the various orchard enemies named above, usually takes over half the crop. Oranges have not been tried but would probably do well. Of figs we get three crops per year, the first in May, the second in July and the third in November. Our first heavy frost usually comes the last of November.

Messrs. E. T. George and H. S. Starrett of Lander Co. state that fruit growing there started with planting a few apples in 1873. In the last ten years quite a number of small orchards have been started and are doing fairly well. The kinds of fruit grown are apples, a few peaches, plums, pears, apricots and nectarines. Our market is this vicinity and fruit is hauled in wagons from 12 to 50 miles. The earlier varieties are liable to be killed by frost about the first of June. Peaches and small fruits are as yet an experiment. Orchards vary in size from 1 to 5 acres. The demand for apples and other fruit is good, but quite a large amount is brought in from California as their fruit is earlier. Our greatest obstacle is frost. No injurious insects. In fruit raising the apple is the staple crop. The best orchards are in the mountains. In the valley, the apple crop if not protected will fail half of the time on account of frost.

Mr. A. C. Cleveland of White Pine Co. reports that sometimes late frost hurts the fruit but they have never been bothered with injurious insects to any extent.

Orchards that are protected by large shade trees do best in this section of the country as the wind is more injurious than the spring frosts. All kinds of small fruits do well here and are profitable to raise. Golden Willow and Silver poplar are the best trees to protect orchards against wind. Both are of rapid growth and do not break easily.

CALIFORNIA—POMOLOGICAL DISTRICTS 15, 16, 17, 18, 19.

PROFESSOR E. J. WICKSON, BERKELEY.

Statistical.—The best general impression of the status of our pomological industries can be had from an examination of the statistics of the kinds and quantities of fruit and fruit products which are shipped beyond state lines. The local consumption of these food supplies, although large per capita, may be disregarded because the population of California is not large and commercially, except in the case of cherries and berries, is not looked upon as a motive in production. Cherries and berries are rising in importance for long distance shipment in fresh form and both move outward in tins, and yet local consumption is important in disposing of the comparatively small product of all small fruits except grapes.

The following statistics, compiled by the California State Board of Trade, are from transportation records and generally accepted as accurate. For comparison I repeat the figures presented in your last biennial report, adding those for 1902:

CALIFORNIA FRUIT SHIPMENTS IN TONS.

	1890	1900	1902
Citrus fruits	34,209	226,546	*225,668
Fresh deciduous fruits	34,042	91,176	100,390
Dried deciduous fruits	32,297	90,052	151,944
Raisins	20,560	36,047	47,575
Nuts	787	6,518	10,918
Canned fruits	40,060	75,556	80,634
Wine and brandy	47,650	90,673	88,682
Total	209,605	616,568	705,811

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* The shipments in 1901 were 323,871 tons.

An approximate idea of the comparative amounts of different fruits of the deciduous class which are shipped out of the State can be had from the following:

Deciduous Fruits	Carloads in 1902
Cherries	245
Apricots	221
Peaches	1,777
Plums	1,480
Pears	2,003
Grapes	970
Apples	*309
Mixed	20
Total	7,025

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* The foregoing statement covers shipments to November 5, 1902, and does not include the total apple shipments which are probably about three times as great as indicated; in fact, direct shipments to Europe alone reached about 450 carloads.

Market outlook and orchard extension.—On the whole the fruit products of California are being easily disposed of at fairly remunerative rates and the business is in good heart and enjoys a good outlook. There is, of course, fluctuation in the values of different fruits and in the market conditions which they meet at distant points. Such "off years" strike the fruits somewhat irregularly and are discouraging first to one special grower and then to another and as our localities are largely given to specializing, according to favoring culture conditions, there is opportunity for complaint somewhere nearly every year. Complaining is the traditional privilege of farmers and fruit growers are entitled to their share of it. Still we find that our fruit growing districts have the busiest towns, the handsomest rural improvements, the largest assessment rolls and are most attractive to home seekers. While these things are true our fruit industries must be counted in prosperous condition, although the greatest anticipations are not always realized.

Although the orchard and vineyard areas are still increasing quite rapidly in the State as a whole, there are some districts in which special extension is notable. The fruits which have advanced most notably are the two pomological kings—the orange and the apple.

The planting of oranges on the mesas on the east side of the San Joaquin and Sacramento rivers through a distance of about 400 miles has increased the acreage of this fruit in that region not less than five fold during the last five years. The profitability of early ripening fruit which can be disposed of before the holidays, cheap land and abundant irrigation water are the three attractions which have led to this large interest and investment. In Southern California, also, orange planting has proceeded and the planting of the standard California orange, the Washington Navel, has been rivaled by the attention given to later ripening varieties—notably the Valencia Late.

A part of the increase of the orange acreage at the south has been secured at the cost of the lemon by budding-over bearing lemon trees to the orange. This has been freely done in the interior of Southern California—the lemon acreage now being almost wholly near the coast where temperature conditions best befit it and where properly grown and cured lemons are fairly remunerative.

The apple acreage is increasing in all parts of the state, but most notably in the Pajaro valley, including parts of two counties, Santa Cruz and Monterey. This compact area of deep, rich soil with its abundant rainfall and cool summer, because of nearness to the coast, produces Bellefleur and Yellow Newtown Pippin apples of exceptional beauty and quality. In this region the commercial handling of the apple has reached the most systematic and greatest development. The output of the Pajaro valley apples has increased from 765 carloads in 1897–8 to 2,200 carloads in 1901–2, and only about one-third of the trees are now of bearing age.

The grape is next in increase of planting during the last two years, although the planting does not represent a net gain of acreage. In some parts there is a constant loss of acreage by phylloxera and by the mysterious "Anaheim disease" or something akin to it. Still the effort to restore the vineyards by the use of resistant roots and the new plantings in parts where no diseases have yet appeared, more than covers, on the whole, the losses in the older regions. Grape prices for wine making have been high for the last few years and promise well; eastern shipment of the most popular table varieties has yielded good profits and the raisin industry has also been profitable. Under these conditions, with the vast areas of good grape land available and the cheapness with which vineyards can be secured, the passion for vine planting is irresistible. The state has made new provision for research and experiment in viticulture by the experts of the University of California Experiment Station and there is full confidence that the menaces to the health of the vineyards will be averted.

The prune acreage of the state at large has declined slightly because of the failure and consequent eradication of trees planted in unsuitable locations. Though the acreage has increased in the best districts such new plantings have been more than offset by the clearings and the prune industry is now in very promising shape. The crops of the last two years have not been excessive and prices have advanced. During the prune passion, the planting of other plums was neglected and considerable areas of plums were grafted over to prunes, because there had been apparently an excessive production of varieties, which could not be cured without removal of the pit, as prunes are, and therefore could only be sold for fresh shipment or canning. This year's experience indicates that the wise planting of shipping and canning plums has a fair outlook.

The Apricot has also sold well. It is growing in favor, both canned and dried, and is each year winning wider favor in the eastern states and in Europe.

The peach has made a distinct advance during the last two years and promises to regain its position as having a greater acreage than any other deciduous-tree fruit in California. The passion for prune planting was so strong in the interior valleys a few years ago that the peach was surpassed by it, but since the prune break of 1900 the peach is regaining ground which it never should have lost. The peach combines the three great outlet avenues of fresh shipments, canned and dried products as no other fruit can. The California peach possesses size, beauty, texture and durability through shipment and canners' processing which are very strong points in its commercial character.

The cherry is gaining ground continually as a long distance shipping fruit and therefore becomes safer to grow, and its acreage is increasing in districts demonstrated to be suitable. Great caution must be exercised in planting elsewhere.

The fig industry comes upon a new basis through the acclimation of the pollination insect which is essential to the success of the Smyrna fig. California Smyrna figs are now being produced in considerable quantities and California is thus equipped to enter the competition with the time-honored Asiatic product for the world's trade in dried figs. Trees of the true Smyrna varieties and of the wild fig, which favors the multiplication of the insect, have been growing for years in different parts of the state, but the insect was absent and the trees unproductive. With these old plantings and the new orchards now being planted, there will be a large product of higher class dried figs than has been produced hitherto.

The olive has not realized all the expectations which California planters have cherished for it. Planting has practically ceased and considerable acreage has been displaced. There are many difficulties with the olive which may be briefly mentioned; the popularity and acceptability of cheap substitute oils for salad purposes militates directly against profitable production of olive oil because appreciation of the superiority of the latter is less liberal than expected; pickled ripe olives are difficult to produce with good keeping qualities; the fruit itself is largely subject to interior decay in advance of maturity: the trees of many varieties which have been largely planted are shy in bearing; trees planted in dry places do not grow and bear as promised by optimistic promoters; the work of gathering the fruit and securing its products is more difficult and costly than calculated. The fact is the olive was boomed in California along spectacular and speculative lines and the industry must outlive the mistakes which have been made. California will produce, profitably, good olives and olive products in suitable places and through the efforts of masterful men and women who can rise to the requirements of production and protection against imitation articles in the trade.

Transportation and Marketing Problems still occupy a large share of the time which producers can devote to local and state assemblies. Though it is impossible yet to record the permanent success of any great undertaking, still the benefits resulting from such degrees of success as have been attained are notable. The skeptic on the feasibility of coöperative action among agriculturists might truly claim, for example, that the greatest undertaking, the Southern California Citrus Fruit Exchange, had never secured control of more than half the citrus fruits produced ; that the Raisin Growers' Association had not only failed to secure permanent organization, but had difficulty even in getting a one-year contract for 75 per cent. of its product and was, therefore, forced to abandon for the present, at least, all of its great ambition toward owning its own packing houses, its own establishment for seeding raisins and the distribution of its own products ; that the great association of prune growers failed so lamentably in its undertaking to sell at its own prices the 150,000,000 lbs. prune crop of 1900 that it never was given another crop to sell. It is true that this is a sad record for coöperative packing and selling, for these are the greatest efforts ever made in the state, but the impression changes if a little color is thrown upon the picture. Though the Citrus Fruit Exchange never controlled more than half the product, it was able to double the return per box to growers immediately after its organization by correcting the methods of its rival buyers and it has exerted a strong influence ever since in correcting abuses, in extending distribution ; in reducing fixed changes—in short it may be said to have rescued the California Citrus Fruit interest from collapse, and during the present year it has formed a merger with rival buyers to prevent gluts and losses in eastern markets, an example which was quickly followed by those handling the eastern shipment of deciduous fruits. Its direct value and its indirect value in showing fruit growers their power when working together are both inestimable—and yet it never controlled more than half the crop. The Raisin Growers' Association immediately upon its organization secured control of about 90 per cent. of the raisin output and fixed the prices at figures which yielded a fair profit to the growers, sold the year's crop, cleared away a considerable carry-over from the previous year and brought a new era of prosperity into the Fresno and Kings county district of the San Joaquin valley, enabling growers to pay off mortgages and have a good supply of ready money besides. It has worked five years or more, never reaching the permanency and perfection of organization which its most ambitious promoters aimed at and yet always rescuing the raisin interest from exactious and oppressions. The association of prune growers had a most difficult task in its effort to sell at a profit the enormous prune product of 1900, including the output of rival sections and of people distrustful of each other. It had rivals at home and enemies at a distance. It made colossal errors in the matter of ways and means and from nearly all points of view it failed utterly and will never outlive its bad name. Out of its failure, however, comes a stronger disposition than ever toward the formation of local associations and their affiliation into central control. Lessons have been learned from failure and the air is cleared after the storms. Coöperation among California fruit-growers is all the stronger because of the failures it has made.

We have now in California from 75 to 100 local associations, most of them owning property in packing houses, etc., buying and distributing supplies, grading and packing fruit, and drying in many cases, selling first class products under their distinctive brands, and acting together in securing advantages in transportation and the like. We have associations of special-product people, walnut growers, almond growers, prune growers, etc., which are in some cases fixing minimum price or arranging public sales, accepting or rejecting bids upon products in bulk and representing many producers. In these lines of local coöperation steady and stalwart progress is being made and general affiliations including these units will in time bring all our growers together in mutual understanding and joint action.

By-Products and the Manufactured Article.—Excepting a few fruits like the citrus fruits and the apple, manufacturing of fruit products continues in California as one of the main purposes in the growth of the fruit. By-products of the orange, such as cured rind, oil, etc., are exceedingly small in amount. Citric acid from waste lemons reaches a higher value, but is still small. Cider making is also a small affair for the local consumption is limited and vinegar making, both from cider and wine, cannot endure expansion for the same reason. Dried apples have proved more profitable of late and the product is increasing. But on the whole the manufactured fruit products of California are a main and not a by-product of the orchards and vineyards. Canning, drying and wine making are great industries and a total export in these three branches of $368,834 tons is more than one-half of the whole tonnage of fruits and fruit products sent out of the state in 1902. It is interesting to note how the different fruits stand on the basis of canned and dried products :

Fruits	Canned Products No. cases (each 24. 2½ lb. tins)	Dried Products in pounds
Apples	15.972	6,450,000
Apricots	294,896	15,750,000
Blackberries	21,750	———
Cherries	51,755	———
Currants	794	———
Figs	———	6,500,000
Gooseberries	1,371	———
Grapes	41,364	*350,000
Nectarines	509	650,000
Pears	458,305	6,575,000
Peaches	1,361,288	29,500,000
Plums	137,191	* *3,450,000
Quinces	749	———
Raspberries	3,555	———
Strawberries	15,782	———
Prunes	———	150,000,000
Raisins	———	100,000,000
Wine (gallons)		15,000,000
Brandy (gallons)		2,209,617

Of jams and jellies, which are in part by-products, about 50,000 cases are made annually. Recently there have been quite promising efforts made toward the establishment of by-product factories for making fruit-pulp tablets or bricks out of fruit, which is too soft and ripe to be otherwise used. The manufacture of tartaric acid from the waste of the wineries has been pursued to a certain extent and there is now offered by a responsible California coöperation a reward of $25,000 for a process by which grapes worth $10 per ton can be profitably used in the manufacture of tartaric acid or in the transformation of the 20 per cent. of sugar which the grapes contain into acid and particularly tartaric acid. This offer will remain open until December 1, 1904.

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* Not raisins, but dried wine grapes.

* * Not including prunes in the dried products, although prunes are included in the figures of canned plums.

Varieties.—California growers are still reducing the list of varieties of fruits grown. Rejections are many; acceptance of new varieties, few. To find a very few which surpass all others in meeting commercial needs and to multiply the product of them, bringing each to its most acceptable size and condition—this is the surety of success in wholesale production and trade such as California is pursuing. During the last two years the new varieties which have attracted wide attention are the Sugar Prune of Burbank (as rich in sugar as the Prune d'Agen, that is about 50 per cent. sugar in the dried fruit, much larger and nearly a month earlier in ripening), these characteristics bringing it close to an ideal of desirability. Burbank's newer shipping plums are also gaining popularity—notably the Wickson, which has sold at the head of the plum list in eastern markets this year. Its planting is likely to increase in the interior districts, where it reaches highest quality. Another few years will bring others of Mr. Burbank's varieties into prominence. The Tilton apricot, a chance seedling originating in Kings county, will take a permanent place in the list because of size, even ripening and regular bearing.

Orchard Management.—Irrigation is continually winning wider recognition as a recourse for safety and greater profit even in regions where heretofore deciduous fruits have been grown by rainfall. The older the trees become and the greater their demand for moisture in order to produce large merchantable fruit, the greater is the irrigated area. The addition of water artificially during the rainy season to the amount which comes by rainfall, is growing in popularity where the sub-soil is deep and retentive enough to act as a reservoir for such water. Where this is not enough, one or two irrigations in the summer are added.

Winter growth of natural verdure, or of legumes sown for the special purpose, plowed into the soil near the close of the rainy season and clean cultivation during the dry season, is still the rule in California orchards and vineyards. There is increasing interest in a summer-growing cover-crop where irrigation is available, but its desirability is not yet fully demonstrated, except in the extremely hot interior regions where the soil temperature runs so high, or the bare soil so reflects the heat, that the trees are injured thereby. The cover-crop keeps the soil cooler and the air moister, but it requires ample water or the cover-crop will rob the trees of their supply.

Low heading and regular pruning of the kind and degree which best suit each tree is almost universal and each year the non-pruners are becoming fewer. There is a smaller acreage of neglected trees because there is a larger wood-pile.

Protection against frost, or rather the prevention of low temperature at the place where it would do injury, is becoming a wider recourse, not alone for citrus fruits which are menaced by frost in December and January, but for apricots, almonds and grape vines which are liable to injury by spring frosts. The burning of crude oil in properly contrived iron pots, about forty to the acre of trees, has been so fully demonstrated to raise the surrounding atmosphere from three to six degrees Fahr. that outfits of these pots, with electric alarms operated by thermostats to give warning of dangerous drops of temperature, are being set up in all parts of the State. The old methods of running water and smoke fires are also employed, but the oil burners are surer to protect the fruit.

Windbreaks for the protection of fruit trees from heavy winds and from prevalent air currents which may interfere with upright growth or bring too much ocean coolness for satisfactory fruit ripening near the coast, have demonstrated great value in California, but the relation of windbreaks to local occurrence of frost has shown unique phases. It has been found that close-growing windbreaks traversing the course of cold air currents have a tendency to act as dams in such currents and to favor frost formation on their windward sides. To prevent this and to promote circulation of air which tends to the equalization of temperatures, windbreaks on the low sides of areas to be protected have in some cases been removed and in other cases the trees have been trimmed up to get the storm break of high growth without interfering with free air flow near the ground.

Nursery methods.—Nothing particularly new has been demonstrated in the line of propagation. During the last few years there has been less of the boom spirit in planting and naturally less speculative propagation by fruit growers and by newly fledged nurserymen. The result has been the strenghtening of our better class of nurseries and the development of specialty propagation. Citrus nurserymen, grape propagators, fig propagators, etc., have reached high success in their chosen lines, and the best of the old line general nurserymen have survived. Better prices have been paid for better trees and there is perhaps better encouragement than ever to push forward enterprisingly in all progressive lines of propagation and distribution than ever before in the State. The exclusion of trees from distant states has seemed a harsh measure and has only been undertaken with deep regret for the occasion which required it. The result has, however, contributed much toward putting California nursery work upon a better foundation. Some outside propagators have shared in this benefit by securing for themselves local centers of propagation and trade inside State lines.

Legislation.—The legislature of 1903 made a change in the horticultural institutions of California by repealing the old law, establishing a horticultural commission of nine members, and passing a new law providing for a State Horticultural Commissioner and a deputy, with suitable clerical assistance. The Governor appointed Mr. Ellwood Hooper of Santa Barbara, who, for nearly twenty years, had been president of the old commission, as the first incumbent of the new position and he appointed Mr. Alexander Craw, deputy commissioner. Thus, the state horticultural work remains practically in the same hands as before, but unhampered by the machinery of a commission which proved very irregular in movement. The facilities for the important and successful entomological work of Mr. Craw are much improved by the opening of new offices and laboratories in a State building in San Francisco. His inspection of all incoming horticultural goods and products has resulted in the exclusion of many dangerous insects and animals from Asiatic countries and the Pacific Islands, for these things are continually presenting themselves either upon imported plants and fruits or in the hands of tourists who are apt to bring them as pets or curiosities. Introduction, breeding and distribution of beneficial parasite insects continues an important branch of Mr. Craw's work and he has worked in connection with a collector whom the state provided to seek for desirable acquisitions abroad. Several very notable successes have been made in this work, the most recent being the introduction and effective distribution of *Scutellista cyanea*, a parasite of the black scale (*Lecanium olaæ*), which has proved of great value in South Africa. This new parasite has been established at several points in California and much is expected from it.

As for the San José scale, its course is practically run in California and it has ceased to be an object of fear; in fact, it is hardly an object of interest. After it was demonstrated that it could be held below the point of injury by the use of the lime, salt and sulphur wash it became so reduced by a true parasite (*Apheli nus fuscipennis*) and was so preyed upon by several predaceous insects as well that seldom is spraying now found necessary. Only where it may be carried into new places in advance of its enemies can it do any serious injury.

As for amateur fruit growing in California, there is exceedingly little of it and only in the smallest degree have we come to selecting varieties on the basis of amateur preferment. Even in suburban districts fruit planting is apt to run to acreage and beyond garden limits. Even in suburban gardens the culture, methods and the varieties are the same that have proved adaptable and suitable to commercial purposes. There will come a time no doubt when we shall establish amateur standards, but they are practically out of sight at present.

OREGON—POMOLOGICAL DISTRICTS 15, 16.

PROFESSOR E. R. LAKE, CHAIRMAN, CORVALLIS.

Progress.—Pomologically speaking this state is having a decidedly strong forward movement. During the past two years local nurserymen have been taxed to supply the demand for trees, while the importations from the east have been the largest ever recorded. The general industrial activity together with the steady in-flow of new home-makers have been the chief factors in the increased interest in fruit-growing regions.

While southern Oregon and the Willamette Valley are the sections in which most new plantings have been made, eastern Oregon and the Columbia basin have both witnessed a pronounced increase in the area planted to fruits. There has been no decline during the past two years as a whole. In a few districts there has been a reaction against certain kinds or varieties, but where this is the case others have been substituted. While southern Oregon is planting apples, pears and peaches, the Willamette Valley is planting prunes, cherries and small fruits; eastern Oregon is planting apples, pears, cherries and small fruits; the Columbia basin is planting small fruits, especially strawberries and some apples. Effort is being made to increase the area of the european grape, the peach and apricot in this latter district.

As yet no fruit is grown under glass, save a few grapes for home use by amateurs. Ours is a population of insufficient wealth to offer inducement for this line of products.

Marketing.—Fresh fruit, save apples, winter pears and the Hood River strawberries and eastern Oregon cherries are sold throughout to the local commission firms. A part of the cherry crop of eastern Oregon is sold, as is the chief part of our prune, pear and apple crops, to eastern commission firms or, as in a few instances, they are sold direct to the eastern dealer.

In matters of picking, packing and marketing there has been little, if any, change during the past two years. Transportation rates remain about the same except locally. Recent agitation by the commission men has resulted in the cancelling of some interior "terminal rates," thus allowing the local commission firms an equal chance with outside firms.

Outside of the leading apple districts as Hood River, La Grande and Medford, no attention has been given to the preservation of fruits by means of cold storage. In these sections some growers or associations desiring to keep the crop for the spring markets, have constructed storage houses of various types, but to date these are all of limited capacity.

Selling organizations.—A steady and persistent campaign in favor of coöperative stock associations is kept up and one, the Willamette Prune Growers' Association, appears to have hit upon a plan that works admirably, giving satisfaction to both grower and buyer. While there are other older associations, notably the Hood River Fruit Growers' Union, dealing chiefly in strawberries, none has done better by its stockholders, who are the growers, than the first mentioned.

The State Board of Horticulture considers this legitimate work on its part and accordingly it has been urging upon the fruit-growers the importance of complete organization. For ten years past this has been a live topic at all our horticultural meetings, but not till recently have we approached effective coöperation among the growers, and even now only a small per cent. of the actual growers are included in the few successful organizations.

By-Products.—During the past few years attention has been turned to the problem of using the cull, cracked and otherwise unfit fresh fruit. While the prune crop, as a whole, is evaporated there is, one year with another, a great loss by rot, rust, cracked and small fruit. Other fruits, save perhaps the small fruits, which are used by the canneries, are likewise subject to great loss from one cause and another. To save this is yet a problem. Formerly this part of the crop was left to rot on the ground ; later many of the better orchardists fed it to the stock, and now it is being turned into cider and vinegar in the more progressive sections. To a very limited extent is it manufactured into jams, or jellies, or marmalades, etc.

New Fruits.—Among our newer varieties of fruit the Lambert cherry has this year made a most remarkable record for size (36 to the pound, on an average throughout the orchard) and market value. It is a large, late, beautiful dark colored sweet cherry that is just coming into bearing, having been introduced through the State Horticultural Society some ten years ago.

The Logan-berry will probably head the list in small fruit plantations for the next few years. Markets have just been getting a taste of it and the canneries are ready to contract at any time at such prices as would appear to promise good returns to the grower.

The acreage of strawberries is steadily growing in all parts of the state and consumption of the fresh fruit is increasing to a marked extent, while the canneries yearly call for a larger quantity than they can get at satisfactory prices.

Orchard Management.—Eastern Oregon and the Columbia basin, use occasional windbreaks, chiefly of Russian and Lombardy poplars. Pruning in the past has been modelled very largely after California styles but in recent years a change is noticeable in the cooler portions of the state. Not a few of the more recent planters are letting all trees except the peach, apricot and nectarine (these latter two are grown very sparingly in the cooler parts of the state) retain the leader, while formerly the practice was to cut back to a very low stub at planting, and thereby prevent the trees from assuming a strict upright form. Particularly in the pruning of the prune was this the practice. In later years as these trees became heavily loaded with fruit many of them broke down, whereupon it has been found that the heart of the trunk is often completely rotted from head to crown. It is now the idea that by leaving the leader this loss may be avoided. Of course the practice of pruning will necessarily be changed to meet the new type of tree. In Eastern Oregon and the Columbia basin all trees in the best cared for orchards are headed very low, eighteen inches to twenty inches, for protection against winds.

No general practice prevails as to frost protection, except to turn off water and stop tillage operations at such time as will allow the wood to ripen before cold weather. In truth the most damage done to fruit trees by frost is done in the later winter or early spring ; when, after a few bright warm days, a severe frost follows. Then " sun scald," " bark burst " and " sour-sap " are the " finger prints " that give the orchardists much concern. Wrapping, shading and painting the wounds is the chief care given the injured trees.

Thus far only a few of the leading growers use fertilizers. Orchards planted twenty-five or more years ago have, in most instances been either abandoned because of being inferior varieties or else because the trees, neglected in their youth, have broken down prematurely. Those planted in later years have not yet drawn sufficiently upon the native food supply to make it evident that artificial applications would be beneficial, or rather profitable.

The plow, disk-harrow, scarifier and smoothing and pulverizing harrows are the chief tools used to-day. On clay soils the clod masher is a serviceable tool, and where ferns abound a device for breaking or cutting the fern off at the surface of the ground is in common use.

In methods of propagation our nurserymen follow the usual practices of the east, however, more prunes are being budded on to Myrobolan stocks, than on to peach, especially for use in the heavier soils.

Enemies.—Orchard pests remain in practically the same condition as two or four years ago, except possibly the mushroom disease of prune trees and the brown rot of both prunes and cherry fruits. These latter troubles appear to be on the increase in several sections. A system of general, though somewhat superficial, inspection of orchards and nurseries is maintained by the officials of the State Board of Horticulture, but as the means at the command of the Board are limited to $3,500.00 annually and the state is divided in five districts, one of which is as large as New England altogether, and the others not much smaller, it is apparent that only superficial work can be done.

The lime, salt and sulphur wash is so effective in the destruction of San José scale that little interest is awakened by the presence of this pest in an orchard and though no one feels indifferent to its appearance in an orchard section, it is held to be of comparatively easy control.

As yet Oregon can boast no real amateur fruit-growers. Occasionally a person is to be found who devotes some thought to the growing of a few unusual kinds or varieties for home use but this only to a limited extent. A few hot-house grapes of the European type ; a few black figs ; an occasional service-berry, and a few others are about all the amateur fruits that can be said to be found here.

WASHINGTON—POMOLOGICAL DISTRICTS 15, 16.

CHAS. H. ROSS, CHAIRMAN, QUINCY, ASSISTED BY C. H. TONNESON, L. M. HULL, WENATCHEE ; F. W. WALDEN, ZILLAH.

In making a report of the fruit industry of the State of Washington it would be well in the first place to state that eastern and western Washington are divided by the Cascade range of mountains running north and south through the state. This chain of mountains is so high that in order to reach Puget Sound, the Great Northern and Northern Pacific railroads were obliged to construct expensive tunnels involving millions of dollars. This great barrier gives the state two distinct climates. The eastern part of the state being open, dry, and in some cases requiring irrigation, is especially adapted to the growing of fruit, alfalfa and grain ; while the western part of the state is composed of rich valleys and uplands covered with dense forests and heavy underbrush owing to the rich soil and greater precipitation of moisture. The western part of the state is well adapted to the growth of all kinds of fruit as well as vegetables and grasses.

The rainfall of eastern Washington annually ranges from nine to twenty-seven inches, while western Washington ranges from twenty-eight to ninety-nine inches.

The State of Washington has been remarkably fortunate in capturing medals at the great fruit fairs. Whatcom county on Puget Sound captured a gold medal at the Paris Exposition and the eastern part of the state carried off medals at Chicago and at the Pan-American Exposition at Buffalo.

We find that many of the insect pests and fungus diseases which are prevalent in the western part of the state are almost entirely absent in the eastern portion, on the other hand some pests which seem to thrive in the eastern part of the state are almost entirely absent in the western part. To illustrate: Fungus diseases are found in the humid district and almost entirely absent in the dryer sections. We suffer little from insect pests on account of our state being new and our orchard districts being scattered. This year the apple crop throughout the state is comparatively light. The pear, cherry and small fruit crop is good.

The great fruit centers of eastern Washington are Walla Walla, Whitman and Yakima and Chelan counties. In western Washington, Vancouver, Chehalis and the counties bordering on the eastern coast of Puget Sound.

Mr. C. A. Tonneson, representing the Sound district, says that with the exception of prune growing, fruit culture is steadily developing on Puget Sound. Apples, pears, plums, prunes, cherries, blackberries and red raspberries are all raised for the local market. The acreage is more than sufficient for the local market, hence the surplus is marketed in the north and middle states.

Vancouver in western Washington is the leader for choice prunes. Hundreds of tons are dried annually and shipped to the best markets of the world. These prunes, by their superior quality, have won great reputation wherever introduced. I regret very much that I am not able to give a more detailed account of their methods. This crop on Puget Sound has been light for every third year and the market has been low and unsteady so that orchards of this class have been extended but little; too many growers on the Sound had only two or three acres, not enough to afford a dryer but still being an amount too great for the local market (green). This difficulty is being overcome by the construction of dryers in communities where prunes are raised.

In the rich valleys of western Washington near the large cities and contiguous to transportation lines, vast acreage is being extended in blackberries and red raspberries which are being shipped by the carload into Montana, Dakota, Minnesota, Nebraska and other states—distances of one to two thousand miles. This fruit is shipped to Montana points in open express cars and farther east by refrigerator cars. About 80,000 crates (24 qts. each) of blackberries and red raspberries will be shipped this season to north and eastern points, nearly one-half will be shipped from Puyallup valley near Tacoma. This fruit attains the highest degrees of perfection. Crops are sure, and returns are very satisfactory. From three to four hundred crates (24 lbs. each) are raised to the acre.

Mr. C. A. Tonneson says further, "That perhaps 150,000 crates of strawberries were raised on Puget Sound this season, nearly all of which were consumed locally or sent to Alaskan markets. This is a fine section for cherries, and apples do well but for the scab; which may be kept in subjection by the Bordeaux mixture. The most popular fall varieties are the Gravenstein, Tompkins King, Wealthy, and Waxen. The winter varieties are Wagener, Jonathan, Esopus *Spitzenburg*, Baldwin, Grimes and the Russetts (except the Golden). The Ben Davis which thrives well in the eastern part of the state is very inferior in size, quality and color here. This apple although a money maker in many sections of the United States is losing ground with us. Pears do well. More attention might be given them. Greenhouse work or gardening under glass is a growing industry. Transportation lines have established refrigerator service and are giving the rate on apples of 90 cents per hundred to Missouri River points in competition with fruits shipped from other points.

Local markets are always the best and since the Alaskan gold discovery excitement the population of Puget Sound has doubled, thus improving our local market.

Preserving, jam-making, and canning establishments have been projected from time to time but prices on all fruits have been too high for such enterprises. No doubt they will be made to pay in the near future as the orchards and gardens are extended.

A State Board of Horticulture was created a few years ago by our State Legislature and some good work has been the result. This Board was greatly assisted in "up-to-date" work by professors of the Pullman College so that our amateur orchardists were not left to grope in darkness. This Board created the "North West Fruit Growers' Association" whose duty it was to regulate the picking, packing, grading and marketing of fruit and to establish uniform packages for shipment. A part of their duty was to see that stringent laws be enacted regarding the introduction of insect pests from foreign stock and fruit packages and to introduce the best systems of propagating orchards. This work is now carried on by what is known as the "Horticulture Commissioner," A. C. VanHolderbeke. The present incumbent is located at Tacoma. He is assisted by the County Inspectors one being chosen from each county and paid by the county for his service.

The nurseries report large sales of all kinds of trees principally apples. One and two year olds being the leaders for transplanting.

Mr. F. W. Walden from the Yakima district, one of the most successful fruit growers of that section, sends in a report from Zillah. He states that about 100 carloads of apples are shipped from Toppinish annually. This is one of the many shipping points of the Yakima district. Peaches do well but are not always a sure crop. Apples were never known to fail. Pears are grown to quite an extent and are shipped to Minneapolis, St Paul and Chicago. Prunes are shipped in the fresh and also the evaporated state. If the peach crop is short in the East then there is a good demand for green prunes. If plentiful, our prunes are mostly evaporated. One house in Chicago sends a man out to Washington every year to buy from 30 to 50 carloads of fancy Yakima apples. One of the buyers usually sent says he can buy a higher grade of apples here than anywhere else in the United States. Mr. Walden's statements are substantially true for while in charge of the fruit exhibit at the Pan-American Exposition we received 50 boxes of apples from his farm which were indeed prize winners and carried off the gold medal. These were sent shortly after the meeting of the American Pomological Society at Buffalo.

Chelan county is not one bit behind Yakima in the cultivation of choice fruits and some claim they have an advantage over other districts. The well sustained plate exhibit of choice fruits at Buffalo was due to the energy and patriotic efforts of the citizens of Chelan county. Wenatchee is the great shipping point for this section. Their leading fruit men are up-to-date in all their methods of handling fruit. The following is contributed by L. M. Hull :

This fruit district consisting mostly of the territory found in Chelan county is commonly known as the Wenatchee fruit belt, from the fact that the immediate country surrounding the town of Wenatchee, has for several years past shipped considerable quantities of fruit east and west over the Great Northern railway.

Also for the seasons of 1901 and 1902, Wenatchee successfully competed for premiums at the Washington State Fair and Spokane Interstate Fair.

There are, however, other sections equally good for fruit raising. Viz. Mission, Entiat, Chelan, Rock Island and Orondo, the latter country being immediately across the Columbia river in Douglas county.

To illustrate the importance of this section as a fruit producer, permit me to say that Wenatchee growers within a few minutes drive, won *seventeen* medals at the Buffalo Pan-American Exposition, this number being more than one-third won by the state of Washington, which was forty-two. These figures, coupled with the fact that the state of Washington won the gold medal for the *best sustained* display of fruit, speak for themselves.

The conditions governing the production of fruits in this district briefly stated are somewhat as follows: Altitude immediately on the Columbia river at this point, 600 ft., with gentle slope to the foot hills, a distance of three to four miles. The climate is such that all the semi-tropical fruits are grown with success. The uplands back from the valley produce many fruits with success, making a long season for certain varieties of fruit. For instance, strawberries are in the Wenatchee market from May till the latter part of July.

In no region has there been any decline in the fruit industry. No fruit grown under glass.

In the matter of transportation the Great Northern railway furnishes service both by freight and express that in many ways is excellent. And rates in *carlots* have recently been granted that are satisfactory. All fruits are shipped in boxes and box crates. Capacity of the apple box is a bushel. Grades of apples four and five tiers deep. Peaches two tiers deep in boxes 11½ inches wide by 18 long, inside measure; depth of box 4 inches to 5½ inches according to size of fruit. There is a strong tendency towards improvement in all directions.

Storage.—So far no storage, except for winter apples which consists of ordinary cellars with mercury kept as nearly as possible to freezing point.

Manufacturing.—Fruit raising being comparatively new as an industry, and the quality being superior, and market prices good, no manufacturing concerns have yet been established excepting a small distillery.

Varieties.—In the matter of best market varieties no positive statement will be given. There are many kinds of much merit, some of them in the experimental stage. At the fruit growers' Institute held in Wenatchee Feb. 12, 1903, where the attendance was large and the interest great, a vote was obtained from the older and more experienced growers upon the most profitable market varieties, with following results which varied but a trifle from the vote taken at a similar meeting the year previous.

Winter Apples.—Jonathan, Rome Beauty, Wine Sap, Esopus *Spitzenburg*.

First three heavy leaders. After these, votes scattered on Grimes' Golden Pippin, Ben Davis, Black Ben Davis, Arkansas Black, Mammoth Black Twig (Arkansas). The last named is growing in favor. Ben Davis, once a favorite, is fast losing ground. Some of these varieties like Wine Sap and Black Twig, are held for the June market.

Summer Apples.—Duchess, Jeffries.
Crab Apples—Transcendent, Hyslop, Siberian.
Peaches.—Foster, Elberta, Simmons, Early Crawford, Hale's Early.
Apricots.—Moorpark.
Pears.—Bartlett is a strong leader.
Cherries.—Royal Ann, Bing, Black Republican.
Grapes.—Black Hamburg, Concord, Flame Tokay.

New Varieties.—Can report two new varieties of peaches. Viz.: Simmons, which has proved its importance as a peach of high commercial value, and Miller's Favorite, which also bids fair to succeed well on the market.

Simmons: introduced by Mr. H. S. Simmons, is a large yellow freestone. Season last half of September. It is a heavy annual bearer, a long distance shipper, very handsome in appearance, resembles the Elberta in form. Quality excellent. As a money-getter it has an unsurpassed record, having sold as high as $1.50 per box in commission houses in the Seattle markets.

I have very little personal knowledge of Miller's Favorite, originated by Mr. Philip Miller. But Mr. Miller has great hopes for this fruit. It is a large yellow clingstone. Season, early October. Good annual bearer and long distance shipper. Good seller.

Irrigation.—All of the fruit sections of this district are irrigated, excepting a few farms in Douglas county, and the Lake Chelan country.

Mulching.—Cover crops, etc., but little resorted to. Almost without exception orchard cultivation is practiced, the spring tooth harrow being the favorite implement.

In the matter of pruning the knife is used freely, or in other words, considerable wood is cut out every year, and as a rule trees are headed low.

Insects and Diseases.—Very little to report under this head. Green aphis has been the most numerous, but is easily killed by free use of whale oil soap and quassia chips. Peach twig borer has been in the valley several years, but the loss of fruit by the ravages of this insect has been very slight. Much the same condition prevails in regard to the codling moth.

Our experience has been so limited that I do not feel warranted in speaking of methods of combating pests. Very little trouble with diseases of trees.

San José Scale.—No injury to the fruit industry from this insect.

Crop for 1903.—The fruit crop for this season is not full, and yet it is very good as a whole. To strike an average on all kinds the shrinkage may amount to 15 or 25 per cent.

In conclusion, I wish to say that I regret that I am unable to give you a better account of the conditions of Walla Walla and Whitman, two of the great fruit counties of the state also of many of the new districts which are coming into prominence. The Walla Walla fruit belt has a national reputation and is shipping hundreds of carloads of fruit annually.

Our experience has taught us that trees come to bearing earlier here than in the East (an average of eleven 50 lb. boxes being picked from trees of an eight year old orchard). We also have learned to buy the youngest trees, cultivate well, prune low, increase your orchard by setting out winter varieties, handle your fruit like you would eggs, never ship an inferior apple, and finally advertise your business.

"He who whispers down the well,
About the goods he has to sell
Does not reap the shining, gleaming, silver dollars,
Like he who climbs the tree and hollers."

NOTE.—For further information regarding fruit-growing in the Pacific northwest, see page 138.

PORTO RICO.

FRANK D. GARDNER, MAYAGUEZ.

In general.—Since Porto Rico became a subject of the United States our people have naturally taken an increasing interest in it. This interest is not confined to the curiosity and pleasure seeker, but takes on a substantial form, whereby much capital from the United States is being invested in various enterprises. These enterprises, whether manufacturing, commercial, or agricultural, all tend to advance the welfare of the Islanders. They not only increase the circulation of money and furnish labor to otherwise idle hands, but through the example of American thrift and enterprise, which they present, they should be an inspiration to a people, the masses of whom, for many generations, have been discouraged in every effort to better their own condition.

Climatic.—The Island of Porto Rico is purely tropical, and frost is unknown, even on the mountain peaks, yet, at the same time, the climate is varied. The level lands of the eastern and northern portions of the island, as well as the slopes that decline toward them, receive the strong trade winds from the east by northeast. These winds are fairly uniform, but attain their maximum velocity in the middle of the day and during the month of March. In the sheltered portions of the central and western parts of the island, the trade winds are so reduced in force and modified that they are scarcely recognized. In fact, calms and gentle breezes from all directions are common in these parts. The rainfall varies from a minimum of 40 inches per annum, in places along the south side of the island, to a maximum of over 150 inches in the northeastern portion. This difference in rainfall produces quite a marked difference in the character of the native vegetation and also makes irrigation, for most crops on the south side of the island, necessary, while on the north side irrigation is not practiced. These variations in climate, together with the varying character of the soil, would seem to make Porto Rico a suitable place in which to grow any tropical product. It may be truthfully said, however, that the range of products now grown is comparatively small and that there is a demand for the introduction of many new products. Outside of the production of coffee, sugar and tobacco, practically nothing is grown on a commercial scale. Among the fruit products, oranges and pineapples are the only ones that are exported, and the combined exports of these probably do not exceed one hundred thousand dollars annually.

Fruits.—There are certain tropical fruits, such as oranges, lemons, pines, dates, figs, etc., for which there is a well established and growing demand throughout the temperate zone, while there are many other kinds, such as mango, mammee, aguacate, soursop, starapple, breadfruit, etc., which are scarcely known outside of their native habitat. The latter class may present many fine kinds of fruit, but it is to the foreigner which the enterprising fruit grower looks for a successful business.

In Porto Rico the orange is receiving more attention than any other fruit, and since American occupation quite a nember of commercial orange groves have been started and most of them are planted with budded stock. Outside of these recent attempts, I know of only one orange grove that deserves the name of such, and that is a small one near the city of Mayaguez, the trees of which are probably twenty years old, and are actually planted in comparatively straight rows. The oranges which are now exported are all from seedling trees, which are scattered throughout the island, either a few about the buildings of each holding, or from trees which grow among the coffee, and serve the two fold purpose of shade for the latter and the production of fruit. These trees are neither cultivated, pruned, nor treated for scale or fungus diseases, yet some of them produce as fine fruits as one would care to eat. These fruits are gathered and hauled loose, like potatoes, in ox carts, over very rough roads, or, more frequently, are transported in pannier baskets on the backs of small horses, over mountain trails to the seacoast towns, where they are sold to the packers for $1.50 to $2.00 per thousand. They represent a wide range in size, color and quality, and it is impossible for the packer, even with the most careful classification, to make cases of uniform quality. They are shipped when the steamer is ready to leave port, on boats, the chief business of which is to carry sugar. The oranges are put in the dark, damp unventilated holds with the sugar, and in their journey of five or more days to New York, it is not strange if many of them arrive in poor condition, nor need you wonder if Porto Rican oranges have failed to establish an enviable reputation in the States.

Citrus fruits.—The indications are favorable to the growing of citrus fruits in Porto Rico on a commercial scale, but such an industry is still in the experimental stage. Those who have planted during the past few years and who are planting now, have little to guide them in their choice of varieties and the treatment of their groves. The present development is confined chiefly to the vicinity of San Juan, the capitol, not because climate and soil is best in that vicinity, but because better facilities for shipment are offered from that city than elsewhere; because many Americans who have some business in that city engage in orange growing as a side issue and like to have their interests as near as possible, and also where some lead others will follow. The interest has been such that within the past few months an organization has been formed known as "The Fruit Growers' Association of Porto Rico." The Association has sent a committee before the legislature and secured an act prohibiting the introduction of diseased nursery stock into the island, and such an organization has it in power to do much for the promotion of fruit production in the island.

Marketing.—As above stated the marketing facilities are poor, but when the production becomes sufficient to justify it, there is no doubt but that suitable steamers will be put on to meet the demand. In the meantime there is room for improvement in the care of gathering and transporting the fruit to the packer, and the latter can improve upon the style of package and manner of packing.

Miscellaneous fruits.—Pineapple growing is not so general as orange culture. The best pines are grown in the dryer portions of the island, and with best results on dry, stony hills or sandy lands. The most famous place for pines is Lajas, a small place in the southwest part of the island, where they are grown on a series of stony, conical shaped hills. The varieties are chiefly two, the Cavezona, or Porto Rico, a large, tender, juicy, white fleshed kind, with an excellent flavor, and a small variety, with yellow flesh, much fibre and very sweet, called "Pan de Azucar." The former is attractive in appearance but a poor shipper, while the latter is very unattractive. When in season eight to ten pound pineapples frequently sell on the streets of Mayaguez for five or six cents each.

At the present writing, August, mangoes and aguacates are very plentiful. Many of these are of excellent quality and, in time, should find a good market in our Northern cities. They present, however, greater difficulties in packing and shipping than the oranges.

Of bananas and plantanos there are more than twenty varieties, but these are used only for local consumption, none being exported. There are many other fruits, of which small quantities only are produced, some of which are worthy of careful study with reference to improvement.

The manufactured products from fruits are guava paste and jelly, marmalade from oranges and mammee and sometimes from mangoes. These are manufactured only by individuals and probably very little of the product ever reaches the United States. During the season which has just closed an experimental canning factory has been in operation in Mayaguez. It confined its experiments chiefly to pineapples. If the result is satisfactory, it is the intention of the company to establish a factory on a commercial scale next year.

Several nurseries have recently been established in the vicinity of San Juan, and are giving their attention chiefly to citrus fruits. Some of these have a large and well assorted stock of budded material, but purchasers will have no guide as to what variety to purchase until the first budded orchards come into bearing.

Another important problem will be that of orchard management. The character of soil best adapted to growing the different kinds of fruit ; its preparation for planting and treatment thereafter. Indications are that the use of commercial fertilizers will become profitable, but they will likewise require time and experiments in order that the planters may know what will be required. The matter of pruning the trees and the treatment of insects and plant diseases will be similar to the requirements in the states, excepting where the insects and diseases are entirely different.

REPORTS OF FRUIT COMMITTEES

I. THE COMMITTEE ON TROPICAL AND SUB-TROPICAL FRUITS.

A. A. BOGGS, WAYNESVILLE, N. C., CHAIRMAN.

Mr. President and members of the American Pomological Society: If the recent progress of American Horticulture has been great, that in the department of tropical and sub-tropical fruits may fairly be called phenomenal.

The development of orange culture in Florida and in California, with the marketing methods which have placed oranges within the reach of the consumer in all markets nearly all the year round; the raising of the pineapple from the status of a curiosity to that of a market staple; the making of the pomelo; and the naturalization of the raisin and the lemon—any one of these would have been an achievement for a generation in the past. But the men who have compassed these wonders are, many of them, still active in the field, and may expect to see the mango and the avacado follow the course of the pomelo, and American dates and dried figs displace the imported article in our markets.

Perhaps the most important advance, to be recorded in this field since our last meeting is the development of several practical methods of propagating the mango. The culture of this, the finest of the fruits of the East, was blocked in this country by the apparent impossibility of varietal propagation except by the cumbersome and laborious process of inarching. The problem has been successfully attacked by several independent workers, but the first solution, at any rate in this country, was that of Mr. G. B. Cellon, of Miami, Fla., who for two years has successfully applied the method of "patch-budding" to this fruit as well as to the equally difficult avacado. His method has been improved on in some particulars by Mr. Oliver, propagator in the government plant houses at Washington, to whose valuable bulletin the inquirer is referred for details of the process. Mr. Oliver, however, is now working on a process of side grafting, which promises to be even better and more economical than budding, and which will make the mango nearly as easy of propagation as the peach.

Those who have been fortunate to taste a really perfect mango, or a well made avacado salad, will need no argument to convince them of the great importance of this work which is removing the only obstacles to the successful commercial planting of this superb fruit in a considerable area in extreme south Florida, and promises to introduce to the American public a new delicacy which must take its place at the very head of the list. For we now have not only the means, but also the material, in the scions and young trees of the best oriental varieties of mango, imported by the Department of Agriculture and by private individuals and now flourishing in the plant houses at Washington and in the open air in Florida.

There are other tropical fruits which hold promise of future importance, such as the papaw, the cherimoya, but the mango and avacado have arrived. The guava too, though it will never rise into rivalry with these fine table fruits, maintains its place as probably the best jelly fruit in the world.

It is to be regretted that more has not been done in the direction of developing the possibilities of banana culture in this country, which has considerable areas suitable to this noble and useful plant.

Continued immunity from severe freezes in Florida is beginning to tell in the yearly increase of the orange crop of the state. We are yet far from the grand total of the crops of the early nineties, but great plantings in the lower peninsula are coming on to replace the groves abandoned after the freeze, and the day is not distant when old records may be surpassed. Perhaps the most salient feature of the new citrus industry of Florida is the rise of the pomelo, as I suppose we must still call it on these solemn occasions, though to producer and consumer alike in daily life it is and always will be grape-fruit. Thousands of the frozen trees have been rebudded to pomelos, and they probably predominate in the new southern citrus belt, but the demand has so far kept pace with the growing supply.

The efficacy of Bordeaux mixture as a preventive of "Die-back" is a most important discovery, especially for the orange-growers of the lower East Coast. On the west Coast the White Fly holds his place as the worst enemy of the citrus family. Many growers report that natural enemies are beginning to diminish his ravages, and a few depend on them alone for protection. But the best course still seems to be to trust in God—and keep your sprayers going.

No tangible results are yet reported in the investigation of the blight of citrus trees. It is to be hoped that the seriousness of this evil will be recognized by the Government and that it will be made the subject of special investigation by men detailed for that particular work and nothing else.

Probably most members of this Society know of the work being carried on by Professor Webber in endeavoring to breed a hardy orange. Of almost equal importance are his experiments with the pineapple. Many of his hybrids have fruited and some of them are showing great promise of combining the hardiness of the Red Spanish with the quality and thornlessness of the Smooth Cayenne parent.

With confidence founded on knowledge of her own resources, Florida faces the future in sub-tropical horticulture, sure that come competition whence it will, there will always be a place in the market for fruit of the quality which she can produce.

A. TROPICAL AND SUB-TROPICAL FRUITS IN CALIFORNIA.

GEO. C. ROEDING, FRESNO, CAL.

Of all the states of the Union, California stands in the lead in her adaptability to grow all the fruits of the temperate and sub-tropical regions, and in addition to this, there are sheltered spots along the Sierras, in the lower foothills, where even some of the fruits distinctly tropical in their nature, have been successfully grown. None of the true tropical fruits have thus far reached any commercial importance, and there is little probability that they ever will, for they require temperatures with a minimum of 60° and a maximum of 90° Fahrenheit, with a humidity of atmosphere not to be found in California. The banana, pineapple, alligator pear, custard apple (Anona cherimolia) and guava have all been successfully fruited in sheltered spots in Los Angeles, Santa Barbara and San Diego Counties, but it is not likely that any of these fruits will attain any importance for export purposes.

The wonderful increase in the planting of sub-tropical fruits, and this applies particularly to the orange, has been astonishing, even to the horticulturists of California. Ten years ago the orange growers in the southern part of the state scouted the idea that either the central or northern part would become competitors in the citrus business. The fallacy of this reasoning has been shown in the remarkable results obtained in the growing of citrus fruits in the tabooed section, and it is even conceded to be a fact, that oranges can be grown from San Diego in the south and as far north as Shasta.

The three necessary requisites for orange culture, are first, an abundant supply of water at all times of the year, and this condition is readily obtained, either from ditches supplied from the rivers, or by means of pumping plants, operated by steam, electric or gasoline power, taking water directly from wells. Secondly, the location must be along the foothills, on ground elevated above the plains, having a westerly slope, with a range of hills to the east. Such a location is an admirable one for citrus trees, the elevation, even though it is slight, is always several degrees warmer than in the plains in the winter, and this advantage, in connection with the additional protection afforded by the hills on the east, preventing the sun's rays from injuring the sap cells of the leaves until some time after it has risen, adds much to the value of the spot for citrus culture. In northern and central California, the orange ripens fully three weeks earlier, due no doubt to the hotter drier climate during the summer months. Seven-eighths of the entire crop is shipped from the southern part of the state, however, even to-day. Fortunately for the future of the industry, the northern oranges are harvested and sold four weeks earlier than the others.

The Washington Navel continues to be the favorite, and as is well known, this is the variety which has made California famous in orange culture. The Thompson Improved Navel, a sport from the Washington Navel, has been found to be a very valuable variety in the earlier sections, ripening several weeks earlier than its parent, and the skin being smoother and thinner, although the fruit averages somewhat smaller in size.

Another variety, which has proven not only to be a delicious orange, but a very profitable one, is the Valencia Late. It causes the orange season to be prolonged far into the summer, and even into the early fall, and has found a most favorable environment in the southern orange district, where it grows to perfection. It is possible with the Satsuma, also called Unshiu, Oonshiu, and Kid Glove Orange, which ripens in October, followed shortly after by the Thompson Improved Navel, then the Washington Navel and Valencia Late, to have the season for oranges almost a continuous one. Other varieties, such as Mediterranean Sweet, St. Michael, Ruby Blood and Tangerine are grown in all sections of the State, but only to a limited extent.

Lemons are grown on a larger scale in the southern part of the State, than elsewhere, and then only in favored spots, as they are much more tender than the orange. The Eureka, Lisbon and Villa Franca are the favorites for commercial orchard planting.

Pomelos, usually given the misnomer grape-fruit, because of their hanging in clusters, will thrive and produce immense crops wherever the orange can be grown. The piquant flavor of this fruit, when properly prepared, has created an active demand for it ; this is due not only to the inviting flavor, but to the fact that it is said to possess medicinal qualities as well. The Triumph and Marsh Seedless are the most widely disseminated varieties, the latter being highly esteemed, due to its large size, fine grained pulp and because of its having very few seeds.

Limes are grown only in a very limited way, in spots very much sheltered. They will never have much commercial value, as the lemon will always be preferred.

The Citron, until within the last three years, has been given very little attention. The industry will develop in time, but as the tree is very susceptible to frost, it can only be planted in sheltered spots. As the imports amount to something over 2,000,000 pounds annually, there is undoubtedly a promising future for the citron of commerce in this state. The citron, like every other fruit which came into competition with fruits grown in the Old World, has had to make a desperate fight to make those, who always contend that "The imported is so much better," admit that California grown and prepared citron has as fine a texture, flavor and aroma as the very finest grade imported from Corsica. The only orchard of any commercial importance is that of Dr. Westlake, of Los Angeles, who has 20 acres growing at Duarte, about 20 miles east of Los Angeles in the Sierra Madre Mountains. The crop of 1902 amounted to 16,000 pounds of the candied fruit.

Fig culture is still in its infancy ; the industry promises much, however, and the indications, are, now, that the Smyrna fig has been successfully produced, that it is only a matter of time when the imported article will be driven out of our markets entirely. It has already been demonstrated that the Smyrna figs grown here, are better than the imported figs; so with this advantage, we should not only supply our own market, with all the figs needed, but have the markets of the world opened to us as well. The white figs, which have been shipped from California, have been mostly of the White Adriatic variety, a very inferior fruit, the figs souring on the trees quite often, and this defect combined with the sulphur bath given them, to give the skins a whitish color, has been the cause of bringing California figs into disrepute.

Years of time and large sums of money have been expended in solving the mysteries surrounding the production of the Smyrna fig. The introduction of the little insect (*Blastophaga*) through the efforts of U. S. Department of Agriculture and the successful establishment of it in an extensive orchard of Smyrna and Capri fig trees in Fresno has made fig culture in California a certainty, The true commercial variety of Smyrna figs, has been christened the *Calimyrna*. with the view of making its origin distinctly Californian, the word being a contraction of the two words California and Smyrna

The prevailing opinion has been that olives grow without any care, but this, like all other fruit growing in California, has not been found to be the case. The idea no doubt originated from reports from the Old World, for it was said that olives grew and thrived there with no attention whatever. California orchardists have had to learn the same lesson with all lines of fruit culture, that is, that no branch of the industry proved renumerative, unless the utmost vigilance to every detail was exercised by the grower.

Many things have operated against olive culture ; in some localities the trees were very shy bearers, and even when there was a crop, the price paid by those engaged in the olive oil and pickling business, hardly justified the growers in picking the fruit. This condition of affairs was attributed to two things : the competition of the adulterated oils, sold for table use, and the apparent inability of the picklers to put an olive on the market, which would keep. Both troubles are being overcome, California pure olive oil is beginning to be appreciated by the consumers, and the demand for it is growing steadily.

The ripe pickled product, whenever it is once introduced, is always called for again, the oily, nutritious, delicate flavor, as compared with the hard, woody, green olive, cannot help but appeal to anyone.

The canning of olives will overcome all the difficulties of keeping ripe or green olives either, for that matter, so that one of the great drawbacks to the future of this business, has now been overcome.

All varieties of japanese persimmons succeed well in California. Their planting has been limited mostly to a few trees here and there. Planting on a commercial scale has never been attempted. The fruit carries well, and the culture of this fruit has a wide field, should it be in demand.

Pomegranates although of very easy culture, have only been grown in a limited way.

The Loquat (*Eriobotrya Japonica*) often called incorrectly the Japan Plum, is found growing throughout California in the larger gardens. The shrubby tree attains a height of twenty feet, the foliage is heavy and of a deep, dark green color, this with the fragrant flowers, appearing in November, followed by the beautiful golden yellow fruit, with its sub-acid flavor, in March and early April, makes it a valuable addition to our list of very early spring fruits.

During recent years, a decided improvement has been made in the Loquat, due to the painstaking effort of Mr. C. P. Taft of Orange, Orange Co., California. Several new varieties have been originated, among the best of which is the Advance, fully three inches and over in length, and from one to one and one-half inches in diameter. The new varieties have a flavor and aroma far superior to the common varieties.

The culture of tropical and sub-tropical fruits in California covers so wide a range of varieties, that it is out of the question to present more than a passing statement of each, without overstepping the bounds required in a report of this nature.

B. NEW FRUITS.

By Professor H. H. Hume, Lake City, Fla.

Citrus Fruits.—Variety, Oneco; group, mandarin orange; form, oblate flattened at the apex; size, medium to large 2½x3¼ inches; weight, heavy; color, deep orange yellow; base, slightly ridged or smooth; calyx, very small; stem, slender; rind, inclined to be rough, though sometimes smooth; thickness, ⅛ inch; adherence, easily detached; oil-cells, conspicuous; shape, balloon shaped; size, large; sections, clearly defined, septa thin; number, 12; size, regular; juice sacks, tissue thin; shape, broad, short; size, large; flesh, free from rag; color, orange yellow; grain, coarse; juice; color, colored; quantity, abundant; flavor; acidity, normal; sweetness, normal; bitterness, none; boquet, excellent; quality, excellent; pith, open, ¾ inches across; seeds; form, top-shaped, beaked; size, small; color, yellowish; number, 12–14; season, January–March; of whom obtained, Reasoner Bros., Oneco, Fla.; origin, raised from seed obtained from Northwestern India in 1888, Reasoner Bros. General notes: This is an excellent variety, the quality being equal to the best. It ripens at a time when no other mandarin oranges are in season.

Plum.—Variety, Howe; group, Japan-Hybrid; form, spherical or slightly oblate; size, medium to large, $1\frac{3}{16}$x$1\frac{9}{16}$ inches; color, deep red, shading to cherry red; bloom, delicate bluish; dots, minute, yellowish, abundant; apex, somewhat flattened with a very slight depression; cavity, acute, narrow, shallow; stem, short, ¼ inch long, slender; suture, none—position marked by a line; skin, thin, leathery; flesh, yellow, firm; juice, colored; flavor, agreeable, vinous; quality, good; stone, cling; form, oval, thick; size, small, ⅝x$\frac{7}{16}$x$\frac{5}{16}$ inches; season, May 25–June 5, all fruits ripening at once; of whom obtained, J. H. Wylie, Interlachen, Fla. General notes: Fruit spurs, short, stout. Leaves, small, finely serrate. Tree, prolific. Quite a desirable plum. There seems to be some confusion as to the name. It is also known locally as *Stumpy*. Said to be a seedling of Kelsey. A hybrid with a native plum.

Plum.—Variety, Terrel; group, Japan (Hybrid); form, rounded, slightly flattened; size, medium to large, 1½x1⅝ inches; color, carmine, or deep wine colored; bloom, light bluish, well covered; dots, minute, yellowish; apex, somewhat oblique; cavity, of medium depth; stem, short, slender; suture, none—position marked by a line; skin, thin, tough, free from astringency; flesh, solid, of medium firmness; flavor, sub-acid, rich, vinous; quality, excellent; stone, cling; form, broadly oval, thick; size, small, ⅝x½x$\frac{5}{16}$ inches; season, May–June; of whom obtained, G. L. Taber, Glen St. Mary, Fla. General notes: A beautiful bright plum of excellent quality. Undoubtedly the best variety that has been brought forward for Florida. It fruits well and regularly. Originated by Mr. Terrel of Hastings, Fla. Seedling of Kelsey. Apparently a hybrid of P. triflora and some one of the native plums. Tree and leaf resembles Excelsior.

C. REPORT FOR DISTRICTS 5 AND 7.

By R. C. Berckmans, Augusta, Ga.

Apples. *Poor House* (*Wade*).—An old variety of Tennessee origin, but seems to have been lost record of, and recently found growing in north Georgia mountains, where it does wonderfully well. Fruit large, rounding, oblate, yellowish green, russet dots, flesh yellowish, mild sub-acid, very good, and an exceptionally good keeper, tree vigorous grower, and productive October to February. This variety is also known as "Wade" in north Georgia, having been found by Col. I. C. Wade.

Peaches. *Ever Bearing.*—Georgia origin, Indian type, freestone, has a long continued bearing season, first ripening fruit about July 1st to 15th and successive crops are produced until middle of September, fruit in all stages of development half ripe and half grown may be seen upon the tree at the same time. First ripening averages 3½ inches long by 3 inches broad, and sizes of following crops diminish gradually. Fruit creamy white, mottled and striped with light purple, oblong in shape, flesh white with red veins near the skin, very juicy, excellent flavor. Recommended for family orchards only.

Hiley (*Early Belle*).—Georgia origin, ripening with Tillottson, but of larger size, highly colored, and quality good. First-class shipping variety. (Note award of Wilder committee.)

Red River.—Texas origin, an improvement on Early Louise, but of larger size, best quality, fine shipper and a profitable market sort, matures from June 10th to 15th.

Waddell.—Georgia origin, medium size, fine shape, skin greenish white almost covered with red which frequently extends through to the stone, flesh usually white, juicy, very prolific, fine market sort, ripe June 15th.

Plums, Japanese *America.*—Fruit large, coral red, flesh light yellow, ripening last of June.

Apple. (*L. Burbank 1898*).—Fruit large, reddish purple, flesh pale red, freestone.

Doris.—Medium size, juicy, sweet, good qnality, remains on tree a long time, ripe July 30th.

Pecans. *Bolton.*—Florida variety, excellent quality, nut oval shape, large size running 40 to the pound, tree annual and prolific bearer.

Japan Walnut. (*Juglans Cordiformis*).—Differs from Sieboldiana in form of nuts which are broad, pointed and flattened, medium size, shell thinner than

Sieboldiana, and if cracked longitudinally the kernel can be removed entire, perfectly hardy.

Juglans Sieboldiana.—Extremely hardy and vigorous grower, fruit produced in clusters of from 12 to 20 nuts, shell thicker than that of the english walnut, meat sweet, and of best quality.

We cannot too highly recommend these two nuts, as they are a valuable acquisition to the list of nuts.

II. REPORT OF COMMITTEE ON NEW FRUITS OF AMERICA

S. B. Green, Chairman, St. Anthony Park, Minn.

TENTH DISTRICT.

Much interest is taken in the growing of seedling fruits in Minnesota and it is the object of the State Horticultural Society to encourage this interest, and with this view it has offered a premium of $1000.00 for an apple of as good quality as the Wealthy, as hardy as the Duchess and as good a keeper as the Malinda. Besides this it has offered considerable premiums to draw out exhibits of seedling apples. It has also distributed seed of apples and apple seedlings grown from the best varieties.

The Minnesota State Agricultural Society has supplemented this by offering considerable premiums for seedlings at its annual Fair held in September of each year.

During the past two years no new varieties of apples have come especially to the front in the 10th district, but my attention has been drawn more especially to groups of seedlings which have been grown by various horticulturists. One of the most notable is that of Mr. T. E. Perkins of Red Wing. These were all seedlings of the Malinda, from a tree that grew in an orchard composed largely of Duchess, Wealthy, Haas and Perry Russett. He has made but one planting and has now about 143 seedling trees twelve years old. Of these one hundred and twelve are growing in an orchard with something over twenty feet between them. These varieties bear almost without exception, a very striking resemblance in size and color of fruit to the Malinda, and nearly all of them are of large size, and a large proportion are good keepers and in quality are better than the Malinda. This is the most remarkable lot of seedlings in resemblance to the parent and in size that it has ever been my pleasure to see.

The Minnesota Horticultural Society through its fruit committee is looking after this and other collections of seedling apples, and through the society an exhibit of these seedlings and other Minnesota seedlings was made at the last meeting of the Pomological Society, where the exhibit attracted much attention.

Another notable collection of seedlings is that which was planted by Mr. H. M. Lyman about twenty years ago. They are entirely seedlings from the Wealthy and he took pains to select seed from isolated trees. These apples do not run as even in size as the collection referred to above, but many of them are of great promise, and some of them have already been propagated for distribution. In this lot there is one variety that so closely resembles the Wealthy that it cannot be distinguished from it. In fact, we have found several such seedlings of the Wealthy in this state, and in each case we have advised against propagating them under a new name.

Another collection of seedling apples is that of Mr. D. F. Atkin of Farmington, Minn., who has several hundred trees planted in orchard rows, from seeds sown something over twenty years ago. This seed was a mixed lot from apples obtained at the stores. Mr. Atkin has never propagated any of his seedlings, but is trying to find some nurseryman who will buy the whole collection. Many of these apples are good keepers.

The Experiment Station at Owatonna has been growing seedling apples since 1887, and among the varieties there that are now coming into fruit are some of considerable promise. This station must have fruited at least 3000 seedling apple seedlings.

At the central station at St. Anthony Park, some attention has been paid to seedling apples, and this year about 200 new seedlings fruited, among which are some of considerable promise.

Manitoba No. 1 is the name of a plum received from Thomas Franklin of Manitoba in 1894, and it is a very productive, hardy, early sort. This year the fruit ripened at the Minnesota Experiment Station by the 3d of August. The fruit is medium in size, roundish oval, quite pointed, bright red with a light bloom and a free stone. The skin is thick and the quality is only fair, but its great hardiness would seem to indicate that it might possibly be a desirable variety for points in northern Minnesota and Dakota, and in Manitoba and Alberta.

Fluke's Hybrid Blackberries.—Several of these fruited at the Minnesota Experiment Station the past year. They are very interesting, and seem plainly to show that they are a cross between the dewberry and the blackberry, but they resemble the former more than the latter. What we received under the name of No. 1 was fairly productive, and its fruit is about as large as the Ancient Britton blackberry.

A. EIGHTH DISTRICT.

A. T. ERWIN, AMES, IA.

PEACHES. In the northern part of the Eighth District there has been considerable interest in seedling peaches. Most of these varieties are inferior in size and quality, to the best standard sorts, but appear to have especial merit as regards hardiness.

Mitchell originated by M. J. Graham, Adel, Iowa. Size, medium; color, white ground, overlaid with red, very red in sun; cavity, medium depth; apex, slightly conical; flesh, white streaked with red, red at seed; texture, melting and juicy; seed, medium size, freestone; season, latter half of September; form round, slightly oval; skin, not heavily covered with fuzz, on shaded side shows many dots; suture distinct, but not deep; quality fair.

Russell originated by L. Russell, Wymore, Nebraska. Form, roundish; apex, flattened; cavity, deep and broad; suture, distinct line; skin, thin, tender and peels readily; flesh, greenish white with yellow veins; stone, free, small roundish; flavor, medium, lacks in sprightness, rather sweetish; size large; color, light yellow ground blotched with light red; juice, pleasant; quality good. Offered in the trade this year. Mr. Russell has a considerable acreage of this variety, and has found it very successful.

CHERRIES: *Wier's Seedlings. Wier's No. 2*, originated by D. B. Wier, of Lacon, Illinois. Tree, medium, upright and spreading; leaves, double serrated, medium to large; foliage, rather sparse, hardy, productive; fruit, oblate, medium; cavity, shallow, broad; stem, ¾ inch to 1 inch; suture, slight; apex, small depression; color, dark red; flesh, firm, meaty; juice, dark; stone, oval, medium; flavor, mildly sub-acid; quality, fair, good;regular bearer; season, few days later than Early Richmond.

Wier's No 44.—Tree medium or slightly above, an upright spreading habit, branches moderately strong; foliage, scattering; leaves, small to medium decidedly oval; fruit, oblate small to medium; cavity, shallow; stem, one inch; color, light red; skin, thin and tender; flesh, tender, light colored; juice, uncolored; quality, moderately good; season, late June, hardy and productive.

Northwest (*Wier's No. 29* or *Baldwin*).—Fruit, round obscurely heart shaped; medium cavity, shallow; size, 1¼ inch to 1½ inch; suture, indistinct; apex, rounded; skin, tough, moderately thick; color, dark red to almost black at maturity; flesh, firm, deeply colored; stone, small, round, slightly astringent acid; quality good; tree resembles English Morello very much in size and habit; growth hardy and productive. This is a promising variety for this section.

APPLES: *Wilfert Seedling*.—Originated by A. Wilfert, of Cleveland, Minn. Form, ovate to conical; size, large; color, yellow, striped; skin with red like Ben Davis; dots, obscure, few; cavity, narrow, shallow; calyx, small; tube, conical, stamens marginal; seeds, light brown, large, flat; flesh, fine grained, mealy when ripe, greenish toward core; flavor, sub-acid; quality, fair, somewhat dry when ripe; season, November. Apparently a seedling of Plumbs' Cider, and it is doubtful if it is sufficiently distinct to merit a name. Mr. Wilfert states that it is a later keeping variety than Plumbs' Cider.

Chisman.—Introduced by M. J. Wragg of Waukee, Ia. Form, ovate; size, medium; color, yellow; dots, distinct numerous; cavity, deep, narrow, greenish under dots; stem, deeply furrowed, ¾ inch; basin, medium, narrow and heavily ridged; calyx, small; tube, conical; flesh, grainy, yellowish juicy; flavor, poor, mild sub-acid; quality, fair; season, winter. A seedling of the Bellflower, it is said bears earlier and is more hardy for this section, it is a very good keeper

Windsor Chief.—A Wisconsin seedling which is being appreciated in Iowa, and is making an excellent record. Form, oblate; size, medium to large; color, dull red; skin, colored throughout; dots, distinct numerous, large; cavity, wide, russeted; stem, stout, short; basin, shallow; calyx, small; flesh, yellowish white, medium grain; flavor, negative sub-acid, juicy; quality, fair; season, in prime condition January 20. In Southern Iowa, where it has been planted most it is one of our most promising new varieties. The trees are productive and the fruit hangs well.

Delicious.—Originated by Jesse Hiatt, Peru, Iowa, and introduced by Stark Bros. Fruit, large, roundish conic, ribbed; skin, medium thick, tenacious; surface, smooth except the ribbing; color, yellow, washed with mixed red, splashes and broken stripes of bright crimson; bloom, whitish; dots, numerous, small, yellow, some indented; cavity, regular, large, deep, gradual, furrows and knobs; eye, medium, closed; calyx, segments medium, erect or reflexed at tips. Core, conical, clasping, medium; seeds, plump, medium, brown; color, yellow; texture, fine, tender, juicy; flavor, sub-acid, very pleasant; quality, good to very good Early winter.

Milwaukee.—A seedling of Duchess originated at Milwaukee, Wisconsin, by Geo. Jeffry. Fruit, large, oblate, much flattened at ends, slightly angular; surface greenish yellow, splashed and, striped, marbled and dotted with bright red and crimson; dots, obscure, many, minute, white; cavity, broad, deep, regular, obtuse, with some stellate russet; stem, short, rather stout; basin, wide, abrupt, deep, slightly wrinkled; calyx, open; segment, erect convergent. Core, small, slightly open; tube, funnel-shaped, long, wide; stamens, medium; seeds, few, short, plump; flesh, yellowish white, very tender, juicy, pleasant acid, fair for table and very good for cooking.

Midwinter.—This variety is distinctly of the Duchess type, both in fruit and in growth of tree. Its special merit is probably in its late keeping qualities. Some of our Northern Iowa growers give it a very good report.

Missing Link.—This variety has been sold considerably in the eastern part of the Eighth District, by an Illinois nursery, and is undoubtedly the old Willow Twig under the guise of a new name.

Among plums the Brittlewood, Terry (Free Silver), and Surprise are the three most promising varieties. You probably have descriptions of these. On account of late frost our plum crop was largely a failure, but we have a few fruiting.

B. DISTRICTS 1 AND 2.

L. R. TAFT, LANSING, MICH.

DEAR SIR:—The following report upon new varieties of fruits for Districts one and two is herewith submitted:—

During the past two years a considerable number of fruits that are quite promising for use in the fruit sections included in the above districts have come under my observation. Among them are several varieties of peaches which are not as yet in the hands of the general nursery trade. They may be briefly described as follows:

PEACH.—*Oceana* originated in Oceana county, Michigan, and introduced by N. P. Husted and Co., Lowell. It has been quite thoroughly tested, having been planted upon a commercial scale in a half-dozen counties. Size, quite large; oval, smooth and without ridge; suture, shallow; color, pinkish yellow, with a handsome cheek; flesh, a rich yellow, delicate, sweet and juicy; pit, small; season, Sept. 10th to 15th. Tree a strong grower, and fruit-buds hardier than those of Elberta. Fruit ships well. A very valuable variety for theamateur or for market.

Work, originated by J. S. Wark, of Douglas, Michigan, is a peach of the Triumph type, which it resembles very closely, but the fruit is larger, less inclined to rot and is nearer a free-stone.

Engle (*Mammoth*), originated at Paw Paw, Michigan, has been quite thoroughly tested and is regarded as one of the most valuable commercial varieties. The fruit ripens just before early Crawford and is frequently sold for it, although it differs considerably from it in form. The fruit-buds are considerably hardier than those of the varieties of the Crawford type and it has taken the place of Foster, Early Crawford and other sorts of that season.

Markham and *Welch* are too out of many varieties of the Hill's Chili type and supposed seedlings of that sort, which are proving very satisfactory. The trees have a stronger growth and the fruit is larger and handsomer, besides being fully as hardy as the parent sort.

Willett is another variety of this class which seems to be very desirable.

Some years ago *Lewis*, a variety which originated in Allegan county, Michigan, was added to the fruit list of the society. At about the same time another variety known as *Early Michigan* was originated in Kent county. These varieties are among the very hardiest, and closely resemble each other, but *Michigan* is of rather better quality and of handsomer appearance.

CHERRIES.—*Dikeman* is a very promising variety of the Bigarreau type which originated in Oceana county, Michigan. It ripens about the middle of July and, as it is very free from rot, can be left upon the trees for several weeks. The fruit is of good size and quality and ships well. The trees are quite hardy and unusually productive.

Imperial and *Kelley* are two varieties of sweet cherries from Berrien county, Michigan. They have been fruited for a number of years and have given very satisfactory results.

Imperial, a seedling of *Black Tartarian*, originated by the late Stephen Cook, resembles the parent sort and the trees are far more hardy and productive.

PEARS.—*Conference*, a large, pyriform, greenish-yellow variety, seems to be very promising. It ripens early in October and the flesh is melting and of the highest quality.

Kraus (*18*) has also given very satisfactory results. It ripens during the first part of September and in size, color and quality has made an excellent showing. Its productiveness has not been thoroughly tested.

PLUMS.—*America*, originated by Luther Burbank, does not seem particularly promising. It is but small to medium in size, the flesh is of only fair quality, is bitter next to the skin, and it clings to the pit. As it ripens at about the same time as several of the Japanese and European sorts, it does not seem of value where they can be grown.

Lincoln, a strong-growing variety of the P. domestica type. The fruit is very large, handsome in appearance and of good quality. It ripens at about the same time as the *Bradshaw*, but the fruit is larger and the trees are more productive.

STRAWBERRIES.—*Dunlap*, an Illinois variety is proving quite desirable as a medium to late sort. The vines are strong and healthy and the fruit is large and, although somewhat inclined to be slightly irregular, is of attractive appearance.

Auto, from Delaware, is another very promising sort. It is of the season of Haverland and the fruit is large, regular, handsome in appearance and of good quality.

Corsican, from New York, is very promising as an amateur variety, but may prove rather soft for shipment. In size, quality, and general appearance it has few superiors.

Sample, from Massachusetts, can well be added to the approved list of the Society. The plants are quite vigorous, healthy and productive and the fruit is uniformly large, regular and of handsome appearance.

CONDENSED REPORT OF AD INTERIM COMMITTEE ON EXAMINATION OF NEW FRUITS.*

DR. F. M. HEXAMER, GENERAL CHAIRMAN.

Your Committee, which is composed of seven sub-committees covering the leading fruits, begs leave to report as follows:

Entries of 36 new fruits for examination by the proper sub-committees were made with the Secretary. These were grouped as follows:

Pome-Fruits	5	entries.
Stone-Fruits	8	"
Grapes	12	"
Miscellaneous and Small Fruits	5	"
Citrus-Fruits	0	"
Tropical and Sub-Tropical Fruits	2	"
Nuts	4	"
	36	"

Under these entries, specimens of 15 varieties have been received by the proper Sub-Committees and reported on by them, through their respective Chairmen. Of these but one, the Hiley peach entered by Mr. R. A. Hiley, Fort Valley, Georgia, one of the originators, has been under test or observation by members of your Committee for a sufficient time to justify an award. To this we recommend that the Wilder Silver Medal be granted. This peach is stated to be a seedling of either Belle or Elberta crossed with either Tillotson or Alexander, and is especially commended as an early peach of firm texture and good color, promising both as a market and dessert variety. It originated from seed planted in 1889, and has been propagated and planted to the extent of many thousands of trees in the vicinity of its origin.

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* This additional Report (see page 82) of Ad Interim Committee on examination of fruits is appended for the purpose of emphasizing the important work of this committee. Through the work of this committee worthy fruits may receive merited recognition. SECY.

Your Committee especially commends the Advance loquat entered by Mr. C. P. Taft, Orange, California, and would have recommended the award of a medal but for the fact that specimens were not brought before the proper Sub-Committee for examination.

Other new fruits submitted that are considered especially promising but needing longer test and further examination are the "Perfection" currant, by C. G. Hooker, Rochester, New York; "Headlight" grape, T. V. Munson, Denison, Texas; "Cardinal" strawberry, George J. Streator, Garrettsville, Ohio. It is recommended that these varieties be held under consideration for further examination and observation.

AMERICAN POMOLOGICAL SOCIETY.

ORGANIZED 1848. INCORPORATED 1887. BIENNIAL MEMBERSHIP, $2.00.
LIFE MEMBERSHIP, $20.00.

PROGRAM OF THE TWENTY-EIGHTH BIENNIAL SESSION.

HELD IN HORTICULTURAL HALL, BOSTON, MASS., 300 MASSACHUSETTS AVENUE, SEPTEMBER 10–12, 1903.

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Des Moines, Iowa.
First Vice-President . . . . . . Wm. C. Strong
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Chairman Executive Committee . . . . C. W. Garfield
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Assistant Secretary . . . . John Craig
Ithaca, N. Y.
Treasurer . . . . L. R. Taft
Agricultural College, Mich.

Chairman Local Committee of Arrangements
Joseph H. Woodford,
Horticultural Hall, Boston, Mass.

PROGRAM.

THURSDAY, SEPTEMBER 10, 10 A. M.
(All meetings held in Horticultural Hall)

Opening Exercises:
- Invocation.
- Address of Welcome—Hon. Patrick A. Collins, Mayor of Boston.

Pres. O. B. Hadwen, Massachusetts Horticultural Society.
Response—Hon. Chas. W. Garfield, Grand Rapids, Mich.
President's Address—Pres. Chas. L. Watrous, Des Moines, Iowa.
Treasurer's Report—Prof. L. R. Taft, Agricultural College, Mich.
Appointment of Committees.

Thursday, 2 p. m.

Reports of Committees :

"The San José Scale in the Orient," (illustrated)—Dr. C. L. Marlatt, First Assistant Entomologist, U. S. Department of Agriculture.

"The Attitude of the Schools to Country Life,"—Prof. L. H. Bailey, Cornell University, Ithaca, N. Y.

"Fruit Gardens, What They Are and What They Are For,"—Mr. J. Horace McFarland, Harrisburg, Pa.

"Relation of Cold Storage to Commercial Orcharding,"—Mr. G. Harold Powell, Pomologist in Charge Fruit Storage Investigations, U. S. Department of Agriculture.

Thursday, 8 p. m.

Reports of Committees.

The evening program in charge of Prof. John Craig, Cornell University, Ithaca, N. Y., devoted to a discussion of the "Progress of Pomology in America."

The following topics and speakers were included :

"A GENERAL VIEW," Dr. F. W. Hexamer, New York.
"NEW ENGLAND," Mr. Wm. C. Strong, Waban, Mass.

"CANADA"	Ontario	Prof. W. T. Macoun, Ottawa, Canada.
	Quebec	Mr. Wm. Craig Jr., Abbotsford, P. Q.
	Nova Scotia	R. W. Starr, Wolfville, N. S.

"A POMOLOGIST OF THE OLD WEST; WARDER," Prof. Wm. H. Ragan, Greencastle, Ind.
"THE MIDDLE WEST," Col. G. B. Brackett, Washington, D. C.
"THE SOUTH," Ex-Pres. P. J. Berckmans, Augusta, Ga.
"THE PACIFIC COAST," Prof. E. J. Wickson, Berkeley, Cal.

Friday, September 11, 9.30 a. m.

Election of Officers.

Report of *Ad Interim* Committee on Examination of New Fruits.

"Grading and Packing Fruits for Long Shipment,"—J. H. Hale, South Glastonbury, Conn.

"Fruit Inspection and the Export Trade,"—W. A. McKinnon, Chief of Fruit Division, Department of Agriculture, Ottawa, Canada.

"Should the Commercial Grower Plant Varieties of High Quality?" —Geo. T. Powell, Ghent, N. Y.

"Pure Food Legislation and its Relation to the Fruit Grower," —Dr. W. D. Bigelow, Acting Chief, Bureau of Chemistry, U. S. Department of Agriculture.

"Pomology at the St. Louis World's Fair," — Prof. F. W. Taylor, Chief Department of Horticulture, St. Louis, Mo.

Friday Afternoon.

The afternoon was devoted to visiting the various points of interest, historical and horticultural, in Boston and vicinity, under the escort of members of the Massachusetts Horticultural Society.

Friday, 8 p. m.

Report of Committee on Award of Wilder Medals.

General subject for evening "Ideals in Pomology." A platform meeting in charge of Hon. Chas. W. Garfield, Grand Rapids, Mich.

While the exact schedule of topics is not given in full, it consisted of five-minute talks on the following topics, and several others by leading members of the Society :

"The Ideal Cluster of Grapes ;" "The Ideal Dessert Apple ;" "The Ideal Cooking Apple ;" "The Ideal in Fruit Packages ;" "The Ideal Market Apple for Trans-oceanic Shipment ;" "The Ideal Fruit Grower's Society ;" "The Ideal Fruit Grower's Family ;" "The Ideal Fruit Grower's Home ;" "The Ideal Journal for the Fruit Grower ;" etc., etc.

Saturday, September 12, 9.30 a. m.

Reports of Committees.

"Judging Fruits by Scales of Points," Prof. F. A. Waugh, Horticulturist, Mass. Agrl. College, Amherst, Mass. ; discussion by Prof. H. E. Van Deman, Washington, D. C. ; Prof. W. R. Lazenby, Columbus, Ohio.

"Waste in Apples," Prof. W. R. Lazenby, Ohio State University, Columbus, Ohio.

"Fruit Culture in the Pacific Northwest," Prof. S. W. Fletcher, Cornell University, Ithaca, N. Y.

Miscellaneous Business.

Adjournment.

Membership.

All persons interested in Fruit Culture are eligible to membership. Biennial Membership (fee two dollars), entitles the member to all privileges for one meeting, including receipt of the volume of Proceedings. Life membership (fee twenty dollars), entitles to the privileges for life and to copies of all volumes of Proceedings on hand when membership is taken, together with such as shall be issued during the life of the member. Fees should be paid to Prof. L. R. Taft, Treasurer. Biennial members who have not yet renewed for the current term are urged to do so without delay.

Points of Interest.

The vicinity of Boston abounds in points of historical and horticultural interest.

Among these may be mentioned Bunker Hill Monument, the State House, Faneuil Hall, Harvard University, Bussey Institution, Arnold Arboretum, Mt. Auburn Cemetery, the Metropolitan Park System, Quincy Market, the vegetable-forcing establishments at Arlington, etc. Opportunity to visit many of these was afforded during the time of the meeting without interfering with attendance upon the program.

Hotel Headquarters.

The United States Hotel, (Kingston, Tufts and Beach Street) was Hotel Headquarters for the Society. Horticultural Hall from the hotel, was reached by taking Atlantic Avenue Subway car on elevated road, either at Beach Street or at South Station near the hotel, transfer to Huntington Avenue trolley car in Subway. This car passed the Hall.

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